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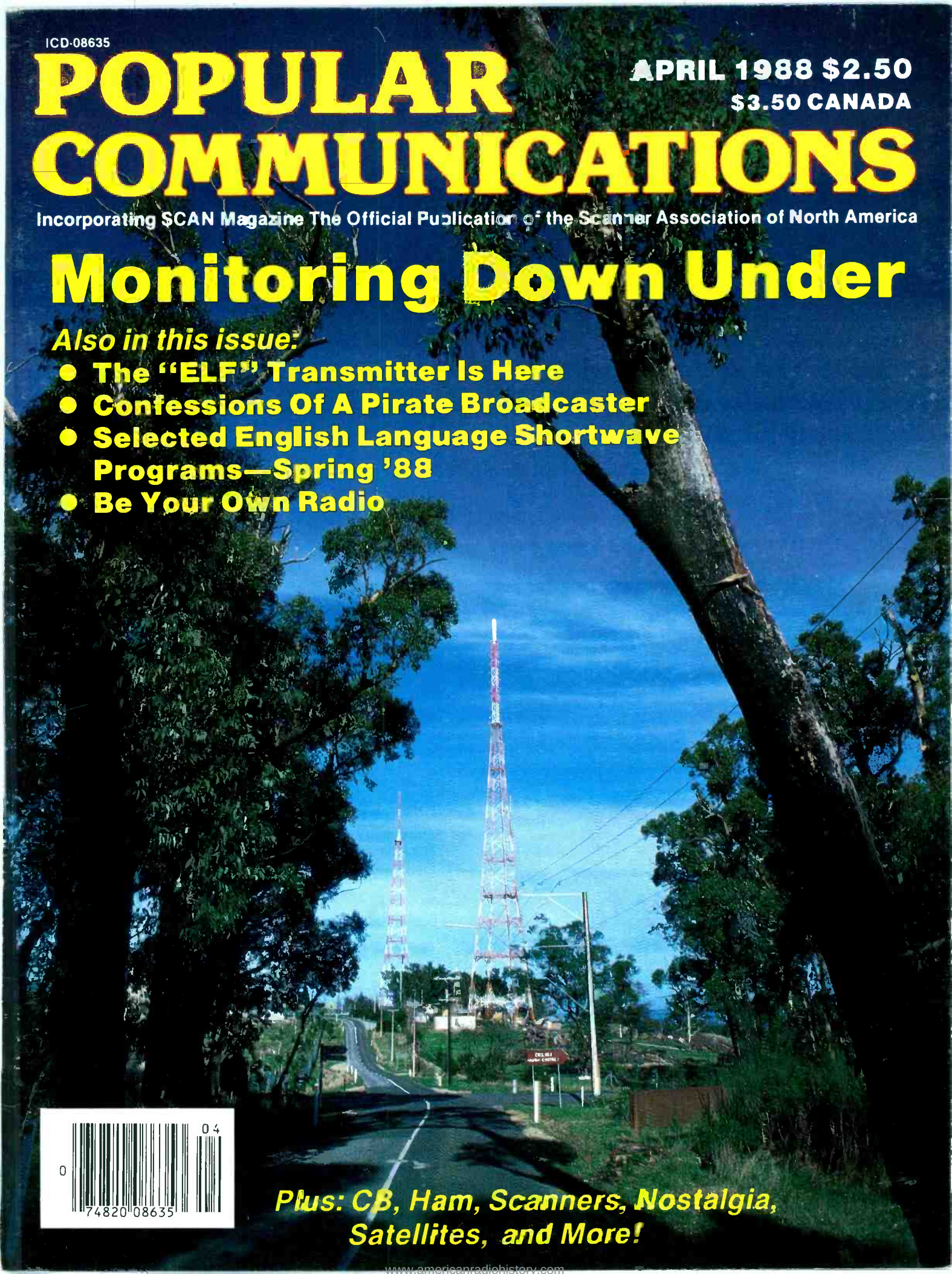

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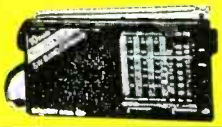

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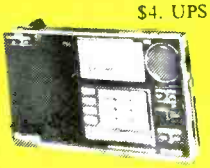

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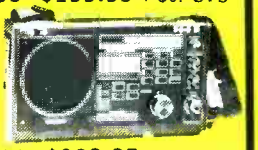

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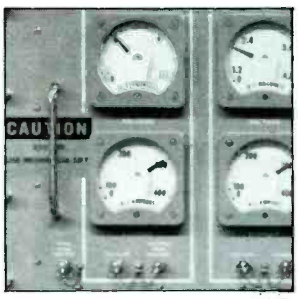

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FEATURES

This month's cover: *Television transmitter towers for Adelaide Australia located on Mt. Lofty. Photo by Larry Mulvehill, WB2ZPI.*

DEPARTMENTS

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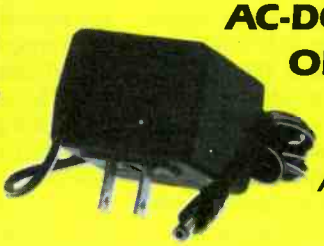

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CIRCLE 8 ON READER SERVICE CARD

BEAMING IN

AN EDITORIAL

BY TOM KNEITEL, K2AES

Feels Like A Truthache To Me?

A ticklish situation arose recently when Miami broadcasters WQBA and WAQI (two stations that serve the huge Cuban-American population of southern Florida) rebroadcast a program aired by *Radio Marti*. The program, an espionage documentary about efforts being made by the Castro government to infiltrate agents into the Miami area, was produced by *Marti* for reception in Cuba. The Miami stations felt that it covered a topic that was of value to their own listeners.

Radio Marti, of course, is an operation of the U.S. Information Agency, the same federal agency that operates the *Voice of America*. Essentially, *Marti*, is a modern version of the CIA's old *Radio Swan/Radio Americas* concept, except that while our government's involvement in *RS/RA* was (barely) covert, *Marti* operates with acknowledged government sponsorship. The thrust of the station is basically similar, primarily to direct politically-oriented programming to the residents of Cuba. In addition to *Radio Marti's* being relayed on shortwave via VOA facilities, it has its own powerful medium wave transmitter deep in the Florida keys.

Radio Marti, it will be remembered, was the station whose reporter showed up at a Presidential news conference about a year ago and asked the President a very pointed question that was apparently too touchy for comfort. It created somewhat of a flap within the halls of the USIA; *Radio Marti's* hapless reporter quickly learned the error of her ways from the USIA brass.

WQBA and WAQI also came to learn of some of the very peculiar factors surrounding the USIA. The thanks they got for trying to alert the residents of the Miami area about being infiltrated by Cuban espionage agents enabled them to rapidly learn that they had violated a federal ban on unauthorized rebroadcasting of programming generated by either the VOA or the AFRTS. Somehow, you'd think that the government would be anxious for this information to be given intense dissemination to the Cuban-American community. Personally, I'd say that, since the Castro government was probably aware of its own espionage activities, the Miami-area residents should have been the major target audience.

But no, said the Washington-type drones who specialize in keeping track of such things. Both the FCC and the USIA agreed that federal statutes were violated, tossing around such impressive sounding things as the Smith-Mundt Act, and Section 73.1207 (b)(3) of Volume 47 of the Code of Federal Regulations, to drive home their point. Not that there are any specific penalties for violations, they just wanted to go on record in pointing out that violations had occurred. Presumably, the government would have to seek injunctions against such practices in order to halt them.

To further complicate the matter, the government was sending out its own brand of mixed signals, with the USIA saying that they could appreciate the media's interest in reproducing for local distribution, some of the information produced by the USIA. In fact, Miami broadcasters have, in the past, been provided with *Radio Marti* tapes for their use, and there doesn't seem to be any law against the American media creating its own programs based upon (but not reproduced directly nor verbatim from) VOA/AFRTS sources. From a practical standpoint, the government can't prevent Americans from tuning in the VOA, *Radio Marti*, nor AFRTS—and the USIA doesn't have any real authority to stop American stations from rebroadcasting the programs since the USIA has no regulatory powers. Meanwhile, the FCC was sabre rattling to the tune of attempting to correct the problem before disciplinary action might have to be taken. Who's kidding whom in this farce?

Thusfar, nobody within the government has been especially concerned with the First Amendment, freedom of the press, the need for the public to have certain information, etc. Nobody has yet pointed out that information produced by the government with public funds (such as publications from the Government Printing Office) isn't covered by copyright and is in the public domain.

Don't laugh, this is really happening. Apparently common sense plays but a minor role in hiring some of the bureaucrats and babbitts on the public payroll. When this crowd can locate an obscure law to wave around, it's cause for celebration, and they don't seem to realize how ridiculous they appear at times.

Now, you may be asking yourself why VOA programs can be freely heard on shortwave by people all over the world (including within the United States), but there are restrictions against our own local media using the material. Although not forged into written law until 1972, it had long been some sort of policy for the USIA to frown upon use of its materials by the American media. Although, in 1967, the media argued against such a policy, and the U.S. Advisory Commission also denounced the concept, it still managed to make it through into law.

The idea behind the restriction was to prevent the government from attempting to change the USIA into an agency dedicated to presenting government propaganda to the American public. The USIA, like the CIA, the Peace Corps, and several other federal activities, is (in theory, at least) supposed to function only outside of our national borders.

Such a notion must have been inspired by memories of Dr. Goebbels in Berlin during the 1930's and 1940's, and the thought that it could eventually come to that here, with the government demanding that newspapers and broadcasters present certain government information to the public. Such a prospect, I'll admit, is frightening, although I think that the way they went about avoiding the possibilities does seem to be uniquely inept. Anybody who thinks that our government has never figured out how to heavily propagandize the American people, despite the Smith-Mundt Act, is rather naive.

Ironically, the VOA goes into a tailspin at the mere suggestion that they are in any way engaged in the propaganda business, insisting that their programs aren't propaganda but "truth." I almost fell off my chair laughing at some VOA type who tried to lay that one on me a couple of years ago. Somehow the word "propaganda" has taken upon itself a negative meaning when, in fact, it doesn't deserve such a fate. However, if the government is trying to peddle the kettle of fish that the VOA isn't doing propaganda, but is just telling the truth, then why the need for retaining the restrictive laws protecting Americans from access to its programs?

Is it it say that people overseas are entitled to "the truth" but Americans must be shielded from such things? For now, we will overlook some of the VOA's liberal interpretations of the truth, such as the original phony "cover" story saying that Gary Powers' U-2 spy plane had wandered off course when the Soviets knocked it from the sky.

Don't you think it's time for this absurd charade to wind itself down? If it's "truth," and if the programs can be heard by Americans within range of *Radio Marti*, VOA, and AFRTS, then is there any real reason to have a law that prohibits our radio stations from rebroadcasting the material? Why is the "truth" our nation directs towards the rest of the world unsuited to our own ears?

Don't you wish these people would stop playing games and grow up? PC

(Thanks to Terry Thompson of Dania, FL, and Richard F. Lythgoe, Evansville, IN for suggesting that I comment on this situation.)

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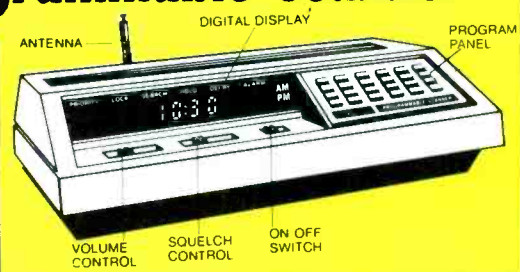

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MAILBAG LETTERS TO THE EDITOR

The most interesting questions we receive will be answered here in each issue. Address your questions to: Tom Kneitel, Editor, Popular Communications magazine, 76 North Broadway, Hicksville, NY 11801.

Just Passin' Through

On 13560 kHz at 2247 UTC I heard several stations (SSB mode) in a roundtable Spanish-Language discussion. Lots of laughing and kidding around. What types of stations might these be?

Kyle Jamison,
McAllen, TX

They might be anything, and the frequency is the clue. Frequency 13560 kHz is not normally assigned (worldwide) for any activities other than industrial, scientific, and medical equipment. Consequently, it's often appropriated by unlicensed stations for various activities from hobby use to guerilla military communications. In fact, anything you hear between 13553 and 13567 kHz, SSB/CW/AM will most likely fall into this category. In the VHF low band, from 40.45 to 40.90 MHz there's another similar communications no-man's land that sometimes produces unusual and unlicensed stations.

A Little Bird Told Me

I notice that many supermarkets and other stores play background music. Is the music reproduced from tape decks, or is it fed by satellites? If by satellites, how can I find out which ones?

Richard Harewood,
Kingsport, TN

At least some chains of stores use music fed to individual stores by audio subcarriers on the transponders of the GTE Spacenet 1 "bird." That satellite carries music for Thriftway (1 channel), Safeway (6 channels), and Payless (1 channel) stores. The most accurate and up-to-the-minute listing of all video and analog subcarrier audio programming services on the North American C and Ku band satellites is The Official Westsat Satellite Communications Chart. This is issued six times per year (a U.S. subscription is $24) by Westsat Communications, P.O. Box 434, Pleasanton, CA 94566.

He Joined The "In Crowd"

Now that I've discovered the amazing 225 to 400 MHz military UHF aeronautical band, I spend most of my monitoring time there. Two communications terms heard often there need some explanation. These are "bogey" and "tally ho."

Newell Gruver, KFL4MK,
Key West, FL

A "bogey" is an unidentified aircraft, and "tally ho" indicates that a target has been sighted visually. The military UHF band, which can be received only on certain scanners, reveals aero surveillance, air refuelling, maneuvers, air traffic control, search and rescue missions, and other interesting activities. What with taking up almost 200 MHz worth of spectrum, there's plenty to monitor there and the band has developed an avid following.

Scanners Ignored by Clubs?

Why don't major SWL clubs pay any attention to scanner users? While they cover SWBC, BCB, utes, and even hams, scanner listeners are shut out. I belong to SCAN. Two other groups oriented towards scanner owners have managed to turn me off.

N. Anderssen,
Brooklyn, NY

You'll have to ask the individual SWL clubs why they continue to refuse to cultivate new members from within the expanding ranks of scanner users. Scanner clubs are nothing new, but a couple have had serious image problems. One group, begun in the 1970's, went into a descending spiral about 1981 and never fully recovered. The All Ohio Scanner club (AOSC), which many hoped would pick up the pieces, has virtually no leadership, serious integrity problems, and a credibility gap as big as Lake Erie. Looks like it's going the same route as its predecessor. SWL clubs singing the blues about not having enough members are missing out by continuing to ignore the scanner crowd.

Frequencies of The Rich and Famous

In Hillsborough, NJ there's a 2,700 acre spread that's the private enclave of reclusive heiress Doris Duke, claimed by Forbes magazine to be (with more than $875-million) one of the richest women in America. Although visitors with advance reservations may inspect a small area of the estate (the formal gardens), the rest of the place is strictly closed to the public. There's a large, armed, an mostly unfriendly private security force very much in evidence. Not long ago, an unauthorized (and unflattering) biography of Miss Duke (*Daddy's Dutchess*, by Patrick Mahn and Tom Valentine) was published and peaked my interest in what's actually going on in this heavily guarded mini-state. In other words, can you dig up for me the communications frequency of the high-tech patrol force?

James Quentin,
Princeton, NJ

Mattel, Inc., the toy manufacturer, has its research and development facilities in Hawthorne, CA. Guards patrol this facility as if it were a top security military installation. Is it possible to monitor their communications on my scanner? What are they guarding there, anyway?

L.N. Sayers,
Gardena, CA

For the activities around Doris Duke's crib, listen for the repeater on 464.375 MHz (input 469.375 MHz). Of the nation's 800 toy manufacturers, Mattel has been one of the biggest moneymakers for many years. Seeing as how the toy business generates almost $13-billion per year, my guess is that they're guarding against industrial espionage. Communications at the Mattel facility take place on 464.4125, 464.6125, 464.6875, 464.7125, 464.9625, 469.4125, 469.6125, 469.7125, and 469.9625 MHz.

Ham Scan

In the August issue you ran a review of the Realistic PRO-2004 scanner. That prompted me to purchase one and I wanted to thank you for aiming me in the direction of this fine piece of equipment. I have also read with interest the *POP'COMM* ham radio column and now I'm interested in exploring that hobby too. The ham bands seem so large (for instance, the 2-meter band is 4 MHz wide), could you clue me in on some of the best places in the VHF/UHF bands to monitor ham communications with my scanner?

Mike Poliakoff,
St. Paul, MN

Let your scanner search from 51.0 to 53.0 MHz for FM simplex and 53.01 through 53.99 MHz for repeater output in the 6 meter band. The 2 meter band has FM simplex from 146.415 through 146.595 MHz (146.52 MHz is the National Simplex Frequency) and 147.42 to 147.585 MHz. There are repeater outputs from 145.11 to 145.47 MHz, and 146.61 to 147.39 MHz. For the 220 MHz band, listen for simplex operations between 223.42 and 223.90 MHz (223.50 MHz is the National Simplex Frequency), with repeater outputs 223.34 to 224.98 MHz. The National Simplex Frequency in the 420 MHz band is 446.0 MHz, and there are repeater operations from 442.0 to 445.0, also 447.0 to 450.0 MHz. Look for FM simplex in the 902 MHz band from 906.0 to 907.0 MHz (906.5 MHz is the National Simplex Frequency), with repeater outputs from 919.0 to 922.0 MHz. In the 1240 MHz band, listen for FM simplex from 1294.0 to 1295.0 MHz (1294.5 MHz is the National FM Simplex Calling Frequency), and repeater outputs from 1282.0 to 1288.0 MHz. These frequency hints are ARRL recommendations, although there may be some localized variations. Frequencies not shown here are used for CW, SSB, TV, packet, and other modes that won't mean much to a scanner. PC

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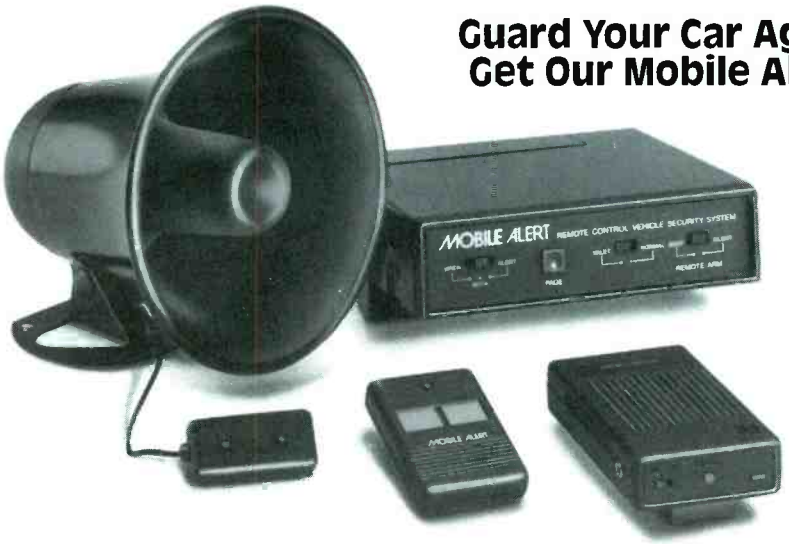

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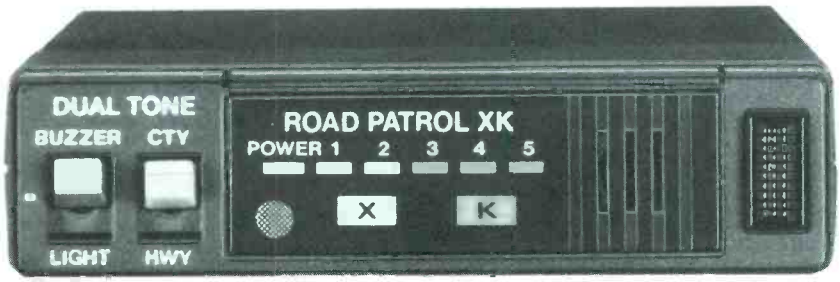

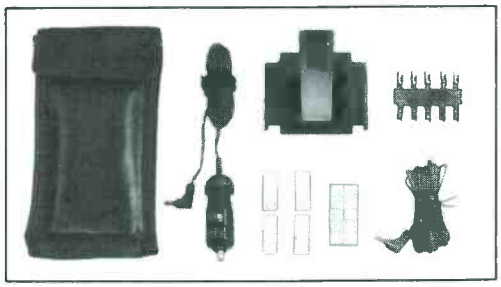

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• We recognized early on that a **Sloper** can outperform a dipole at the same height, for many incoming wave angles. The **Sloper** really shines on weak, low angle DX signals. A **Sloper** also requires only a single, elevated support—it's easier to install than a dipole.

• The model DX-SWL is designed with specially coated 12 ga. solid copper wire elements which are 25% greater in diameter than the more commonly used 14 ga. wire. Engineers know that a larger diameter yields less resistance, and thus less loss per unit length. Even though 14 ga. wire is cheaper, it is not acceptable for use in any Alpha Delta antenna.

• Because DX-SWL antennas are used worldwide in less than ideal environments, only high quality stainless steel hardware is used. Even though it is more costly than plated hardware used in other cheaper brands, we know that you want to put an antenna up once, and forget it. Climbing great heights to replace rusted connections is no fun. Due to the direct sun, high heat environment of some DX-SWL installation sites, we use only specially selected white coil form material. Black forms used by other brands are not acceptable due to heat absorption and possible coil distortion.

• Before you buy **any** shortwave antenna, check out the design details and transmit capabilities thoroughly—even if you're not going to transmit. We don't want your investment to go up in smoke!

Model DX-SWL Sloper Antenna is available for **$69.95 at your Alpha Delta Dealer.** For direct orders send $69.95 plus $4.00 shipping (USA only). Call for export order prices.

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Law Enforcement Officials Continue to Rely on Scanner Owners

It is mystifying why a few law enforcement officials continue to try to keep the public isolated from their daily operations through the use of scrambling systems that can cost their communities hundreds of thousands of dollars. Fortunately, most law enforcement officials today understand that it is far more effective to have citizens "tuned in" via scanner radios rather than trying to stop a few criminals from also listening. The fact is, that any criminal who wants to listen in, can find a way to do so, anyway. The black market is full of stolen decoding gear that originally cost departments dearly and has now been compromised. So, instead of gaining the assistance of local citizens, they have excluded their best allies. Now only the criminals can listen in. The heads of most law enforcement agencies are not stupid. They have begun rejecting the sales pitches for high-tech encryption gear that can cost up to $2,000 per mobile unit. The highly effective National Neighborhood Watch program, sponsored by the National Sheriffs' Association, is one example of enlisting citizen support rather than rejecting it.

SCAN has always supported the Neighborhood Watch concept and we currently have materials available at greatly reduced prices. One of the more interesting items is a color video tape showing how scanner owners can help in crime prevention efforts. Due to the large volume of these tapes being produced for police and sheriffs' departments we have been able to reduce the price to just $19.00, including U.P.S. shipping. Also available is the official Neighborhood Watch "starter kit," including sample decals, program manual, and other information. The cost is just $3.00 postpaid when ordered through SCAN. A special combination price of $20.95 is available when ordering both the video tape and starter kit at the same time. When ordering the video tape, please be sure to specify VHS or Beta. Address orders to: SCAN, Neighborhood Watch, P.O. Box 414, Western Springs, IL 60558.

Cellular Phones in Emergencies—Another Look

After our recent editorial about cellular phones being no better than a "dixie cup and a string," we have been contacted by several cellular phone carrier companies who have complained that those statements were not accurate. They point out that in many cities there is an access system that is supposed to give certain individuals or departments priority. While there is a logic behind such a system of priorities, it still doesn't change the basic premise of our editorial. In fact, it may make a stronger case for alternative modes of communications. Obviously, if the cellular phone service providers have found it necessary to lock out some of us, there is a problem with system capacity. Some people have been chosen to have the privilege of making a cellular phone call in emergencies while many others (you and I) are denied that privilege. There is no argument that the Governor of the state or the Commander of the National Guard should have first access to the system. However, they also have alternative means of communications. Pity the poor citizen in an emergency attempting to summon help and save a life . . . the car phone that works so well most of the time is suddenly useless. Most people who are unfamiliar with how the *radio*telephone cellular system works will be shocked that their call will not go through during times of even minor emergencies. (You'll notice that the cellular carriers don't like to call their services *radio*telephone—they would rather have you believe that it is the same as a regular phone. Nonsense!)

To be fair, we should note that even the "wireline" call from your ordinary phone is likely to get through in a widespread emergency. That's the reason why Amateur Radio groups such as RACES and CB radio organizations like REACT are so important. Spontaneous networks of radio operators are helpful in emergencies, too, but they can't compare with a group that has trained to operate a disciplined network. If you are interested in the safety of your community you should check on groups active in your town. All this talk about how our sophisticated telecommunications system makes the need for volunteer emergency communications obsolete, is very misguided. Rather than investing in some computer controlled systems, most communities would be better off in spending a small fraction of that amount to support voluntary emergency radio club groups. Not only is it more cost effective, it is just plain more effective in a true emergency.

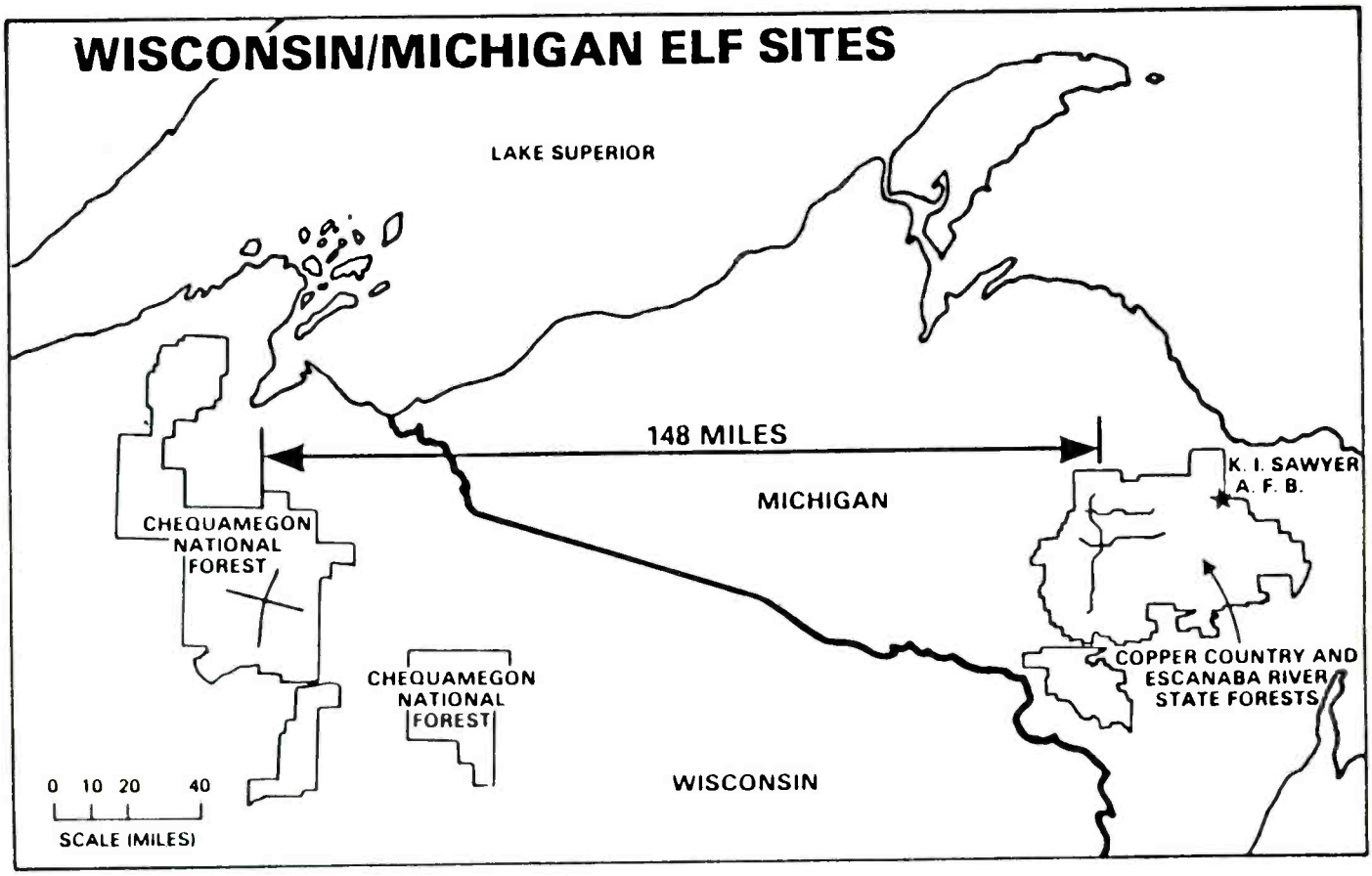
SCAN Public Service Award on TV

Channel 8 in Cleveland and Channel 23 in Akron, Ohio, both carried reports recently of the SCAN Public Service Award. Accepting the award (left to right in the photo) was Sheriff David W. Troutman of the Summit County Sheriffs' Department, Detective Richard Headley, FBI Special Agent James Bently, Lieutenant Robert D. Zarle, and FBI Agent-in-Charge Charles Colitre. The personalized plaques are presented to every SCAN Public Service Award winner as well as the person who made the nomination. Also included is a cash award from SCAN.

Left to right:
*Sheriff David W. Troutman**
*Detective Richard Headley**
Special Agent James Bentley, FBI
*Lt.f Robert D. Zarle**
FBI Agent-in-charge Charles Colitre
**Summit County Sheriff's Dep't.*

Left to right:
Special Agent James Bentley, FBI
*Sheriff David W. Troutman**
FBI Agent-in-charge Charles Colitre
**Summit County Sheriff's Dep't.*

Shown here is FBI Special Agent James Bently accepting the SCAN check presented by Sheriff Troutman. Bringing recognition to law enforcement officials can be a very rewarding experience. You don't need to know the person—just reading about an especially heroic act in your local newspaper is sufficient. A brief letter, plus a copy of the newspaper story, is enough to enter the nomination. Please give us the date the newspaper story ran, plus the telephone number of the newspaper if you know it. Nominations should be sent to: SCAN Public Service Award, P.O. Box 414, Western Springs, IL 60558.



The ELF Is Here!

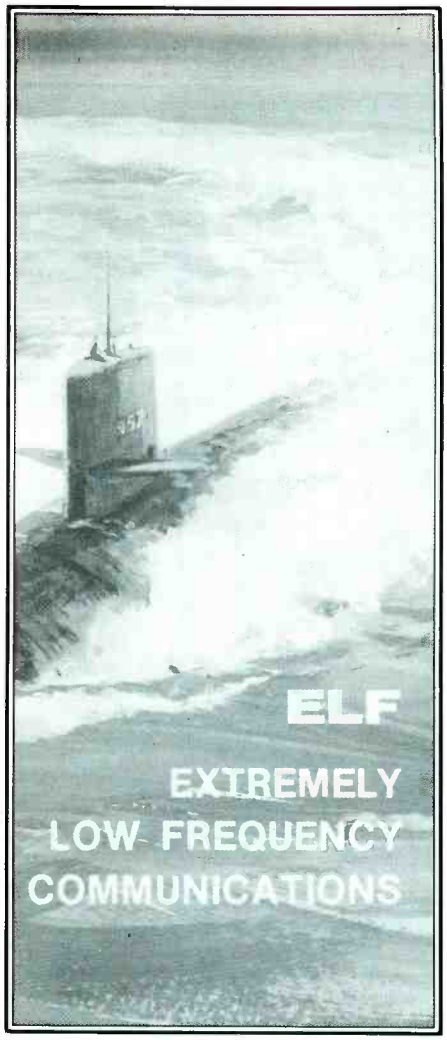
We Visit The New E.L.F. Transmitter Site

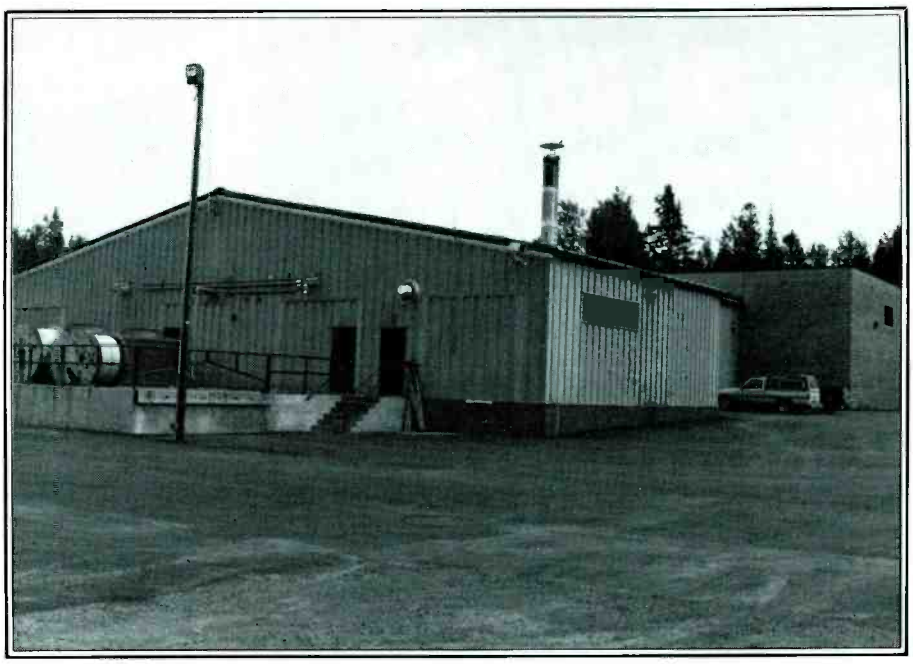
BY TERRY O'LAUGHLIN, WB9GVB

The Navy's Project ELF (Extremely Low Frequency) is certainly the strangest radio system in the world. It has the lowest frequency, 76 Hz, and the highest input power, 2.3 million watts. It is designed to communicate with submarines, but is located 1500 miles from the nearest ocean. It has the least efficient antenna, only 2 to 3 watts of RF is actually radiated. It has the slowest data rate, 15 minutes to send a three letter code group. There are reasons for all these odd characteristics, but first, let's look at the facilities.

Project ELF has two transmitter sites, the Wisconsin Transmitter Facility (WTF) near Clam Lake, WI in the Chequamegon National Forest and the Michigan Transmitter Facility (MTF) near K. I. Sawyer Air Force Base in Michigan's Upper Peninsula. The WTF has been in existence since 1969. It was originally built as a test site for Project Sanguine (which was never completed). After years of inactivity, it was extensively rebuilt and came on line in the summer of 1985. The MTF is under construction. It is expected to come on line in the fall of 1988. A third installation, the Message Input Seg-

WTF main gate, Lt. Cress (left), Master Chief Radioman Rick Badger (right).





WTF main building, contains transmitters, tuning and machine networks, offices, shops and main control room.

ment (MIS) located on K. I. Sawyer AFB, was completed in October, 1985. It is not a radio facility, but, it is an important link in Project ELF's operation. *POP'COMM* was allowed to visit the Clam Lake WTF within weeks after it became a fleet asset.

On the day I arrived, Project ELF was running full tilt, pumping almost 2 million watts into its antennas. The emergency power system was being tested. Three Cummins diesel 1 megawatt generators created a deafening roar as I passed through the generator shed on my way to the transmitter building. A two week supply of fuel is kept on site in underground tanks.

Inside the transmitter building, I could clearly hear the slow FSK alternating the carrier between 72 and 80 Hz. The noise was subtle but eerily powerful. A glance at the antenna monitor panels confirmed my gut feeling, 6400V at 300A. That's 1.92 million watts!

The WTF is designed for independent operation. After the MTF comes on line, the two facilities will operate synchronously with the MTF as a slave. Though the two facilities are 148 miles apart, Project ELF's 2500 mile wavelength makes them look like two elements of the same antenna.

The WTF has four 650 kW transmitters and four 7 mile antennas strung in a big X. The antennnas resemble oversized Beverage antennas with two parallel insulated 1 inch thick stranded aluminum lines 25 to 35 feet above ground. To an untrained eye, they look like power lines. Each antenna terminates in an extensive ground system at the far end.

The MTF will have four 500 kW transmitters and three antennas totalling 56 miles in length strung out in a giant F.

Messages to be broadcast on Project ELF originate at the Commander of Submarine Forces Atlantic (ComSubLant) in Norfolk, VA or the Pacific equivalent, ComSubPac in Hawaii. Messages from ComSubLant arrive at the WTF and MIS on 2400 baud encrypted phone lines. Messages from ComSubLant are relayed through ComSubLant in 100 wpm teletype via phone line, satellite, or HF radio.

Inside the WTF, data from the encrypted phone line is routed through a decrypto unit, into a Sperry-Rand AN/UYK-20 computer set up as the Message Processing Unit (MPU). From the MPU, the data is routed through an encrypto unit to another AN/UYK-20, this one set up as the Transmitter Processing Unit (TPU). When I visited, the Navy had black tarps tied over the highly classified encryption, and decryption, units. Otherwise, I was allowed to examine and photograph everything. The output of the TPU drives the modulator which generates the world's slowest FSK.

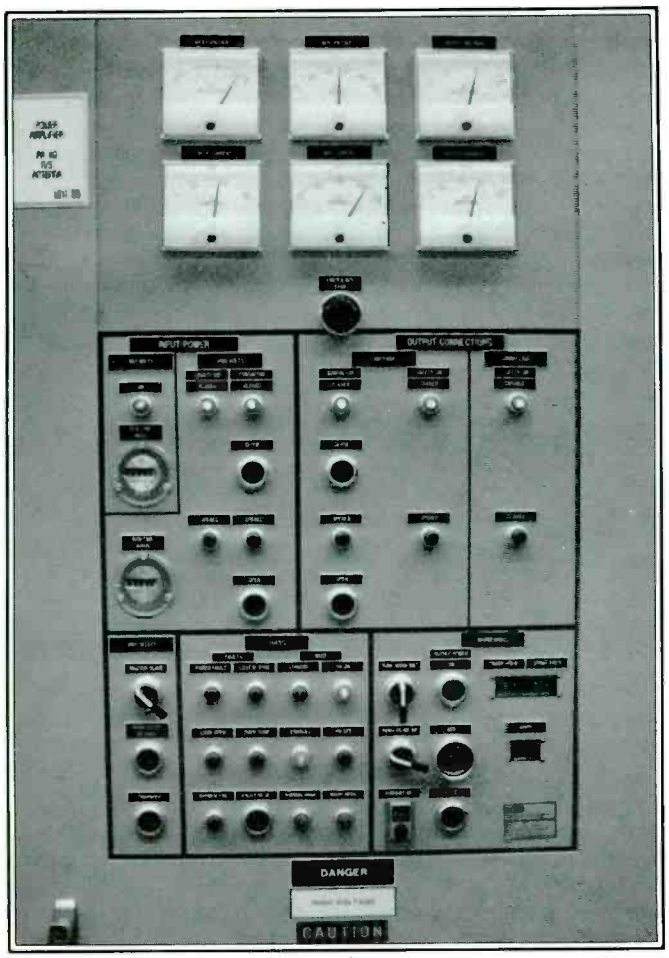
To understand why Project ELF has such strange operating characteristics, let's look at a bit of history and operating theory. Communication with submarines has always been a problem. Radio signals are easily attenuated by sea water. Even VLF transmissions from sources like TACAMO aircraft, NLK at Jim Creek, WA or NAA at Cutler, ME can only penetrate the ocean 30 to 40 feet. To minimize detectability, a submarine must run below the thermocline, a zone of sharp temperature differences that can be several hundred feet deep. The thermocline scrambles audio sounds and confuses sonar detectors.

In the late 1950's, scientific research into the Extremely Low Frequency band (30-300 Hz) turned up several unusual characteristics. ELF radio waves can penetrate sea water several hundred feet, they can travel extraordinarily long distances with very little attenuation, and they are barely affected by ionospheric disturbances like sunspots or nuclear explosions. One scientist, W.O. Schumann, discovered that the earth has resonant frequencies beginning with a fundamental of 7.6 Hz. When the Navy began testing in the early sixties, they chose the 6th and 10th harmonics, 45 and 76 Hz. The results of those experiments established the operating frequency for Project ELF.

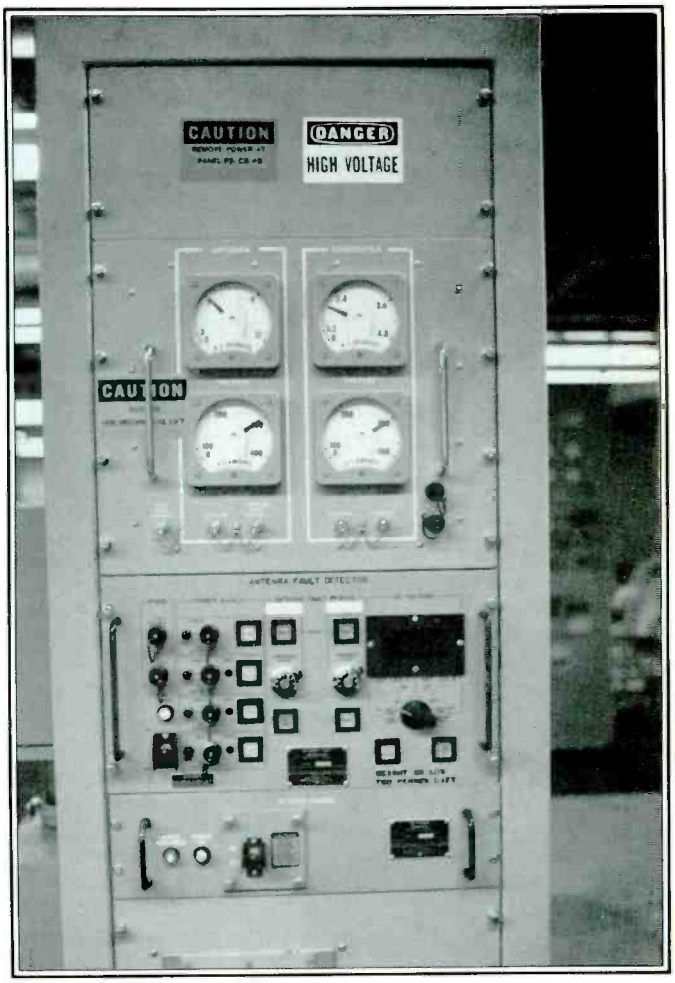
Antenna design at 76 Hz is tricky. With a wavelength of 2500 miles, tuned antennas would have to be enormous. This led the Navy to design Project Sanguine, which had a mammoth transmitter and antenna grid array, covering 40% of the state of Wisconsin. The proposed installation would have had 6200 miles of underground antenna with 100 high power transmitters in hardened bunkers. Political opposition killed the project, but the WTF (then Wisconsin *Test* Facility) continued operation on 45 and 76 Hz well into the 1970's.

In 1975, the Navy proposed a scaled-down version, Project Seafarer, with 2400 miles of antenna in Michigan's Upper Peninsula. Political opposition also scuttled those plans.

Project ELF incorporates a small portion of the Seafarer grid and an extensively up-



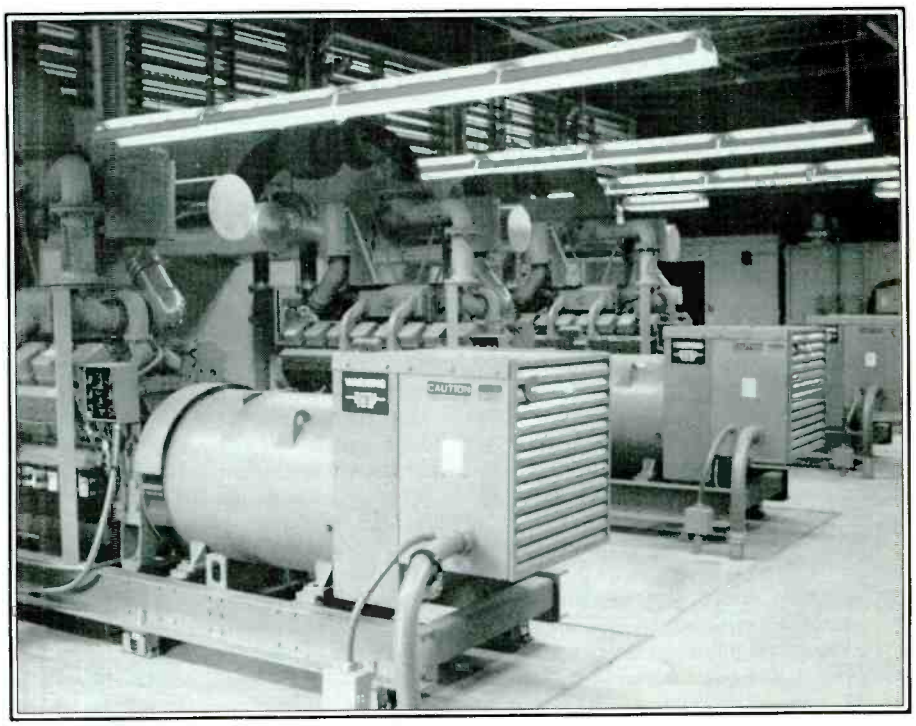
N-S power amplifier control panel.



E-W antenna monitor and fault detector.

dated Sanguine test facility. The total antenna length will be 84 miles. Normal operating power will be 2.3 million watts. Advances in receiver technology and signal processing will make up for the lost size. Because the antennas are a tiny fraction of a wavelength (like using a pin for a CB antenna) they are horribly inefficient, only 2 to 3 watts of RF leaves the antenna. Fortunately, at 76 Hz, a few watts can almost circle the globe and penetrate well into the ocean. Though exact data is classified, Navy spokesman say that ELF signals can be received "hundreds of feet" under the ocean. Messages have been successfully decoded 400 feet under the Mediterranean Sea and the Arctic ice cap. A three letter message takes 15 to 20 minutes to decode. There is some trade off of time versus depth, but the extremely low carrier frequency severely limits the maximum data rate.

Strategically, Project ELF's main use is as a bell ringer. It is a one way system, the submarine must surface and establish communication in the conventional HF/VHF bands to reply. It is an oddball system, but the only means the Navy has to contact a deep running submarine. Only a handful of receivers are currently deployed. At $1 million per copy, they are understandably scarce. Still, Project ELF would make a great ute catch, but I forgot to ask if they would QSL.



Generator shed interior, three Cummins 1 megawatt diesel generators.

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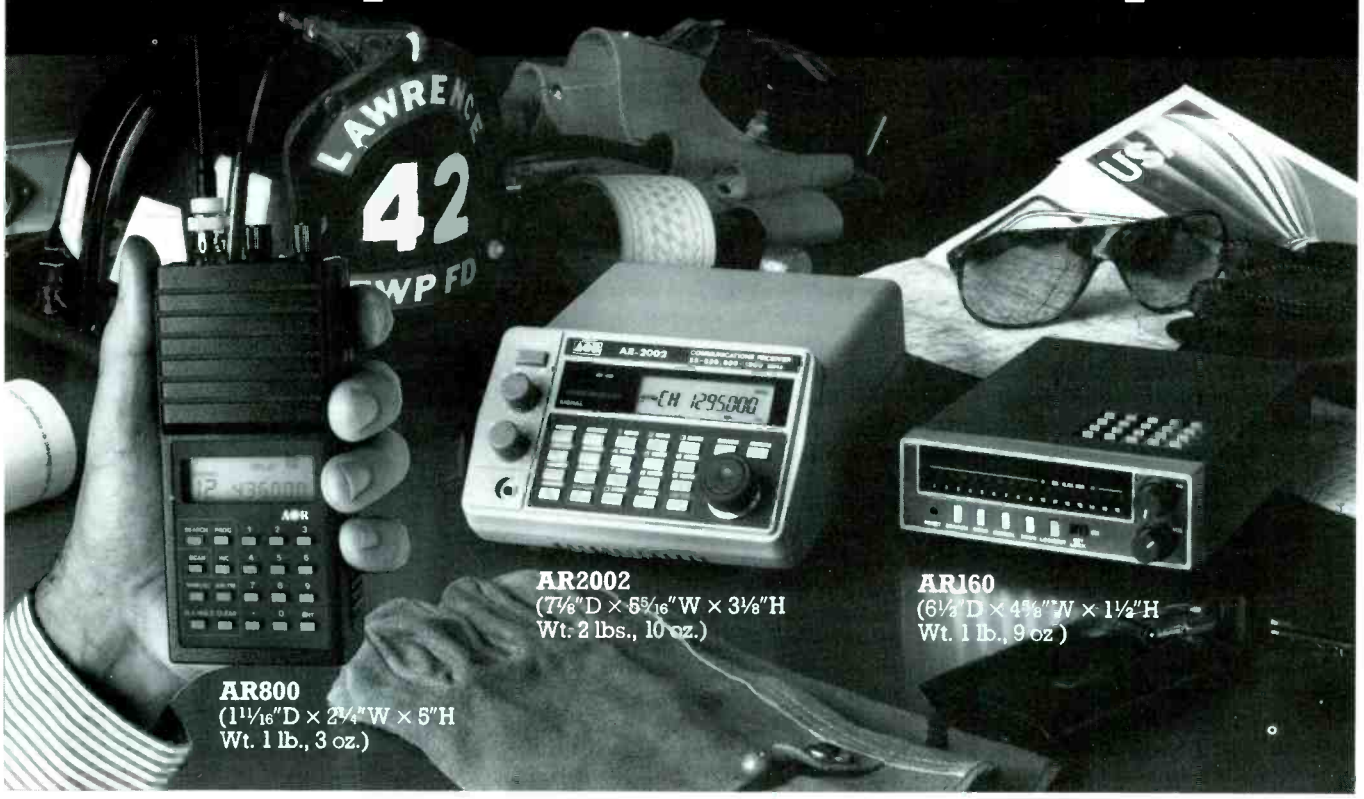

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Radio With A Conscience

"The Radio New York International Story"

BY ALLAN H. WEINER (of RNI)

Radio New York International (RNI) was a dream born in the minds of three people. Myself, my long time associate and friend Joseph-Paul (J-P) Ferraro, and Randi Steel, an avid radio broadcast enthusiast. As early as 1971 we had all talked of constructing an offshore radio station. There seemed to be no other legal way to establish a commercial station in the New York metropolitan area except to purchase an existing station. That would have been a multi-million dollar expenditure and way out of our reach.

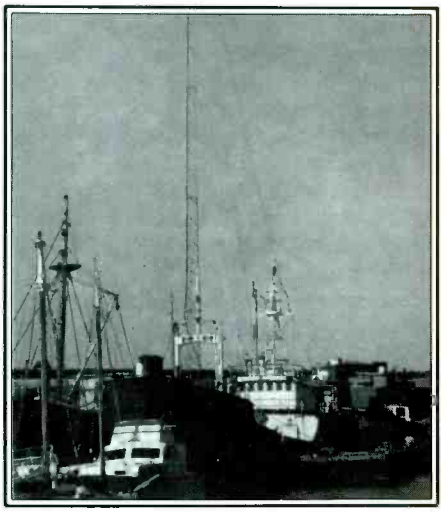
Many people have asked me why I had taken such a risk to build RNI? My answer has always been that when you believe in something as strongly as free radio, and you know what you are doing is right, you find the determination to do it. So many people talk of doing so many things, but so few are willing to stick their necks out for what they believe in. Change in broadcasting is what we had hoped for. A totally free and uncensored radio station dedicated to the theme of love, peace, and understanding is our goal. I am serious about this last statement. RNI, through its broadcasts, would encourage its listeners to do whatever they can to promote world peace, love of each other as neighbors, and the understanding we all live on one world and need to preserve it. In addition, 10% of all profits from radio advertising would go to the homeless of New York City through recognized charities. To myself, J-P, and Randi, RNI would be doing its part to promote these ideas.

We are not out to challenge the authority of the government. I cannot believe they (the FCC) really believe we had spent all this time and money just to thumb our noses at them. I believe the law is clear. RNI is completely legal. There are two offshore radio stations currently on the air—*Radio Caroline* off the coast of London, England and *The Voice of Peace* off the coast of Israel. Both stations operate in the same international waters, under the same laws that we did. I think it says a lot that all charges were dropped against me and my fellow shipmate, Ivan Rothstein, one month after our ship was raided by the FCC and Coast Guard.

I also find it astonishing that in this free and tolerant nation, our ship was literally pirated at sea by my government! There we were playing some good old rock & roll; when at 5:30 in the morning of July 28th, we were greeted by machine gun and rifle toting Coast Guardsmen. The FCC knew we were not violating any FCC regulations by operating in international territory, but without any search or seizure warrantes they came on board and tore apart our floating radio station.

At the end of July, we were left with a disabled radio ship, a lot of publicity, and little money. Since then, the radio ship *Sarah* has been repaired and repainted. She had a new generator installed this past fall. Some new audio processing equipment has been hooked in.

For the technically minded, the AM transmitter is a modified Gates 5 kW AM. A Collins 10 kW FM transmitter feeds a two bay ring antenna atop the *Sarah*'s 103 foot mast. Our shortwave unit is a 300 watt converted military BC-610 transmitter and the longwave rig is a 75 watt army surplus set. The AM antenna is a sloping "T" and at ¼ wavelength on 1620 kHz the antenna matches the transmitter very well. The shortwave signal is fed into a ½ wavelength dipole strung between two masts. The longwave antenna is a 4 meter wip. All in all the equipment performed well the four days we were on the air. The AM and shortwave signals were received just about everywhere in the U.S., the shortwave on 6240 kHz was picked up in Europe. The *MV Sarah* is 168'



Here's the Sarah in Boston getting set for the future.

Last September we gave the ship a new paint job.

The Sarah rode out last winter at a pier in Boston, Mass.

long, 25′ wide, and displaces 409 tones. She is a great ship and handles the sea well.

Currently, the *Sarah* is lying in Boston Harbor awaiting her return to the airwaves. Our plans are to bring her out as soon as the warm weather arrives. The only major stumbling block would be if we could not obtain the necessary funding. Over the past months, I have been trying to raise the needed cash to bring her out. Funds are needed to make the ship ready for Coast Guard inspection, renewal of her registry, and fuel and food for two month's operation. We are looking for a person, or organization, willing to help us in this endeavor. We hope to sign on the air with a full programming schedule. RNI currently has three land based studios in New York to produce programs and commercial ads.

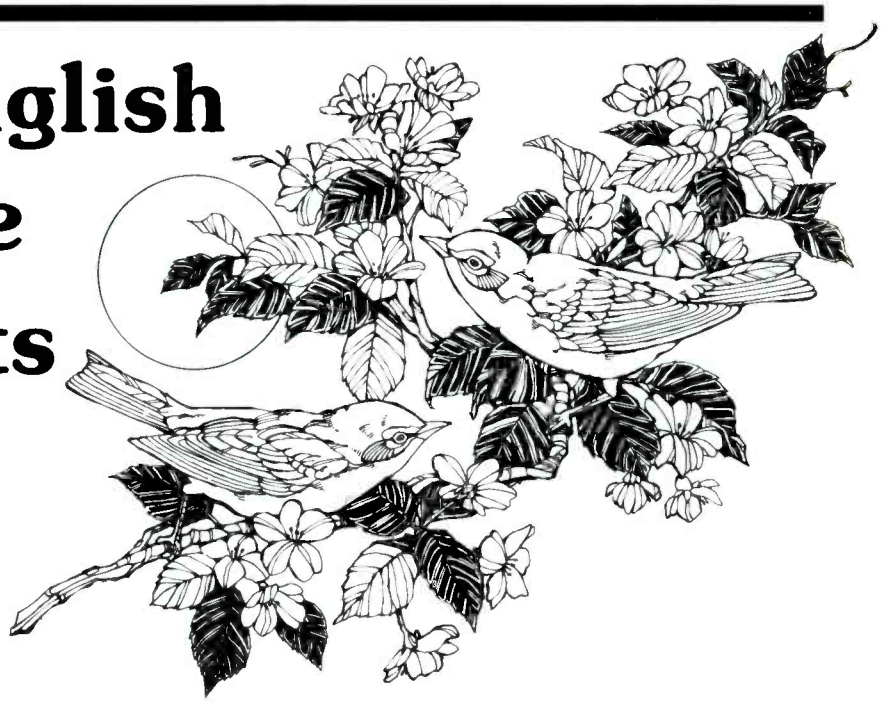
RNI is a unique combination of equipment, resources, and talents. It is the dedicated efforts of many people to realize a simple dream—to bring a totally free form rock & roll station with a conscience to the listeners of the New York area. With a little help we hope to do just that.

We believe that RNI finally got caught up on sending QSL's to the many DX listeners who sent in reception reports. In the event there are any *POP'COMM* readers who sent a reception report to RNI and still haven't gotten their QSL, please let us know. Our address is: Radio New York International, 496 LaGuardia Pl. (Suite 451), NY, NY 10012. PC

Selected English Language Broadcasts

Spring 1988

BY GERRY L. DEXTER



Note: There are hundreds of broadcasts aired in the English language every day on the shortwave broadcast bands, many of them directed to North American audiences. This is a representative listing and not intended as a complete reference. The listing is as accurate as possible, however stations often make changes in their broadcasting hours and/or frequencies, often with little or no advance notice. Some broadcasters air only part of the transmission in English or may run English into the hour following. Numbers in parenthesis indicate an English start time that many minutes past the hour. All times are in UTC.

Time	Country/Station	Frequencies
0000	Radio Austria Int'l.	9650
	BRT, Belgium (30)	5910, 9925
	Radio Portugal (30)	9689
	KUSW, Utah	11980
	HCJB, Ecuador (30)	9720
	Radio Berlin Int'l., E. Germany	6080, 9730
	REE, Spain	6125, 9630
	Radio Canada Int'l.	5960, 9755
	Radio Norway Int'l. (Mon)	9580, 9605
	Radio Havana Cuba	6090
	Vatican Radio (50)	6150, 9605, 11780
	Radio Beijing, China	9605, 9770, 11715
	Radio Sofia, Bulgaria	6070, 11720
	BBC, England (30)	5975, 6175, 7325, 9515
	Kol Israel	9435, 9855, 11610
0100	Radio Baghdad, Iraq	6110
	REE, Spain	9630, 6125
	Voice of Germany	6040, 6085, 6145, 9545, 9565, 9605, 11785
	RAI, Italy	9575, 11800
	Radio For Peace, Costa Rica	7375
	Radio Japan	15280, 17810, 17835, 17845
	Radio Moscow	5915, 5940, 6000, 6045, 6115, 7115, 7150, 7215, 7310, 9530, 11770, 12010, 12050, 13665, 15455
	WHRI, Indiana	7400, 9745
	Radio Austria Int'l. (30)	6000, 9550
	Radio Prague, Czechoslavakia	5930, 6055, 7345, 9540, 9630, 9740, 11990
	Kol Israel	9435, 9855, 11610
0200	RAE, Argentina	9690, 11710
	Radio Bucharest, Romania	5990, 6155, 9510, 9570, 11810, 11940
	Radio RSA, South Africa	9615, 9880, 11730
	Radio Cairo, Egypt	9475, 9675
	Radio Netherlands(30)	6020, 6195, 9590, 9895
	KUSW, Utah	9850
	Radio Sofia, Bulgaria	6025, 6110, 9520, 9585, 9835, 11910
	Radio New Zealand(30)	15150, 17705
	Radio Canada International	5960, 9755
	Radio Beijing, China	9645, 11790, 11980, 15455
	Radio Kiev, Ukraine SSR	7185, 7205, 7260, 11790, 13645, 15180
	HCJB, Ecuador	6230
	Radio Sweden Int'l. (30)	9695
	RFI, France	3965, 5950, 6055, 9790
	Swiss Radio Int'l.	5965, 6135, 9725, 9885, 12035
	Voice of Free China	5985, 9765, 11740, 11745, 15345
	Radiobras, Brazil	11745
	Radio Polonia, Poland	6095, 6135, 7145, 7270, 9525, 11815, 15120
0300	Radio Austria Int'l.	6185
	Voice of Nicaragua	6100
	ZBS, Zambia(30)	3346, 4910
	Radio Budapest, Hungary	6025, 6110, 9520, 9585, 9835, 11910

Time	Country/Station	Frequencies
	HCJB, Ecuador	9720
	Radio Berlin Int'l, East Germany	6080, 9560
	UAE Radio, United Arab Emirates	9640, 11940, 15435, 17890
	Voice of Germany	6010, 6045, 9700
	Capital Radio, Transkei, S. Africa	3930
	Radio France Int'l.(30)	3965, 6175, 7135, 9550, 9790
	Radio Japan	5960, 17810, 17845
	Trans World Radio, Netherlands Antilles	9535
	Radio Beijing, China	9645, 9770, 11715, 11980
	BBC, England(30)	5975, 6175, 7325
	Radio Prague, Czechoslovakia	5930, 6055, 7345, 9540, 9630, 9740, 11990
	HRVC, Honduras	4820
	Radio Polonia, Poland	6095, 6135, 7145, 7270, 9525, 11815, 15120
	Radio Tirana, Albania(30)	7065, 9755
0400	Radio Havana Cuba	5965, 6035, 6090, 6115, 6140
	Radio Botswana	4820, 7255
	Radio Lesotho	4800
	Radio Berlin Int'l.(30)	6080, 9560
	Voice of Turkey	9445
	Radio France Int'l.(40)	6045, 6055, 6175, 7135, 9550, 9800, 11700
	Swiss Radio International	6135, 9725, 9885, 12035
	Radio Budapest, Hungary	6025, 6110, 9520, 9585, 9835, 11910
	RAE, Argentina	9690, 11710
0500	Radio Netherlands(30)	6165, 9715
	KUSW, Utah	6175
	REE, Spain	6125
	Voice of Germany	5960, 6120, 6130, 9635, 9700
	Radio Japan	5990, 15235, 17810
	Radio Moscow	6095, 6150, 6190, 7260, 7345, 11790
	Radio Havana Cuba	5965, 6035, 6090, 6115
	Voice of Nigeria	7255
0600	ELWA, Liberia	4760
	HCJB, Ecuador	9720
	Radio New Zealand	15150, 17705
	Radio Korea, South Korea	6060, 9570
	Radio Canada Int'l.	9740
	WCSN, Mass.	7365
	Voice of Nicaragua	6100
	Radio Cook Islands	11760
0700	Radio Australia	5995, 15160
	KUSW, Utah	6185
	Solomon Islands Broadcasting Corp.	5020, 9545
	Radio Japan	5990, 15195, 15235, 17810
	Radio Havana Cuba	9525
	BBC, England(30)	5975
	TWR, Monaco(25)	7160, 9495
0800	BRT, Belgium(25)	17600
	KNLS, Alaska	6095
	WHRI, Indiana	7365
	Radio Beijing, China	9645, 11980
	Radio Australia	9580, 11720
	WRNO, Louisiana	6185
	Radio Netherlands(30)	9630
0900	Falkland Is. Broadcasting Service	3958
	KUSW, Utah	11980
	Radio New Zealand(30)	9540, 11780
	Radio Canada Int'l.(30)	5960, 9755
	Adventist World Radio, Portugal	9670
	Radio Japan	11840, 17810
	NBC, Papua New Guinea	4890
1000	Voice of Vietnam	9840, 15050
	Radio Norway Int'l.(Sun)	9590, 15180, 17780
	Radio Australia	5995, 9580, 9770
	Kol Israel	11585, 11605, 13750, 15095
	Solomon Is. Broadcasting Corp.	5020
	HCJB, Ecuador	6130, 9745, 11925
	Radio Singapore	5052, 11940
	WHRI, Indiana	7355
	Radio Oman	9735, 11890
1100	Radio Singapore	5052, 11940
	Radio Finland Int'l.	11945, 15400
	Radio Japan	5990, 6120, 7210, 17810
	WHRI, Indiana	5995
	Voice of Vietnam	7430, 9730
	Radio Thailand(30)	9655, 11905
	Radio France Int'l.(15)	6175, 9590, 9805, 11670, 11700, 11790, 15195, 15425, 15435
	Radio Pakistan	15605, 17660
	Trans World Radio, Netherlands Antilles(10)	11815
	BBC, England	5965, 6195, 9515, 11775
	Radio Pyongyang, North Korea	6576, 11735
1200	Radio Austria Int'l.	15320
	Radio Bangladesh(30)	12030, 15525
	Radio Finland Int'l.	11945, 15400
	VOPK, Kampuchea	9695, 11938
	KUSW, Utah	9850
	Radio Tashkent, Uzbek SSR	5945, 7275, 9600, 9715, 11785
	Radio France Int'l.(45)	15365, 17720
	Radio Australia	5995, 9580, 9770
	Radio Pyongyang, North Korea	9600, 9715, 9977
	Radio Ulan Bator, Mongolia	9615, 11990, 12015
1300	BRT, Belgium(30)	15590
	Radio Finland Int'l.	15400
	All India Radio(30)	9545, 11810, 15335
	Voice of Vietnam(30)	9840, 15010
	Radio Canada Int'l.	9625, 11855
	Radio Norway Int'l.(Sun)	6040, 9590, 15310
	Radio France Int'l.(05)	15365, 17720, 21645
	Radio RSA, South Africa	9750, 15125, 17810

Time	Country/Station	Frequencies
	Radio Beijing, China	9530, 11600, 11755
1400	KVOH, California	9495
	Radio Finland Int'l.	15105, 15400
	Radio Korea, South Korea	9750, 15575
	Radio Norway Int'l. (Sun)	9530, 15245, 15310, 15315
	Radio Sweden Int'l.	9695, 15345
	Radio Japan	5990, 7210, 9695, 11815
	KTWR, Guam(30)	9870
	FEBC, Philippines	9670
1500	WHRI, Indiana	15105
	Radio Veritas Asia, Philippines	9770, 15215
	Radio Beijing, China	11600, 15165
	BBC, England	15260
	Voice of Indonesia	11790, 15150
	Radio Pyongyang, North Korea	9940, 9977
	HCJB, Ecuador	11740, 15115, 17890
1600	KUSW, Utah	15225
	UAE Radio, UAE	11940, 15300, 15320, 17865
	Radio Nacional Angola	9335
	Radio Norway(Sun)	7290, 9590, 11850, 15310
	WCSN, Mass.	15280
	WRNO, Louisiana	15420
	BSKSA, Saudi Arabia	9705, 9720

Time	Country/Station	Frequencies
	Radio France Int'l.	9860, 11700, 11705, 11995, 15315, 17620
	Radio Pakistan(15)	11610, 11625, 15125, 15605
1700	Radio Afghanistan(30)	11755
	WHRI, Indiana	15105
	Radio Surinam Int'l. (via Brazil)(30)	17835
	Radiobras, Brazil	15265
	Kol Israel	9460, 11585, 13750
	WRNO, Louisiana	15420
	Voice of Nigeria	11770
1800	Radio Canada Int'l.	15260, 17820
	WCSN, Mass.	21515
	Radio Havana Cuba (30)	9670
	Radio Kuwait	11665
	Voice of Nigeria	15120
	BRT, Belgium(30)	11695
1900	KUSW, Utah	17715
	Radio Canada Int'l. (30)	5995, 7235, 11945, 15325, 17875
	VOIRI, Iran(30)	9022, 11930
	Kol Israel	11610, 12080, 13725, 17630
	Radio Kuwait	11665
2000	Radio Algiers, Algeria	15215
	All India Radio	9910, 11620
	WCSN, Mass.	9465
	Radio Kuwait	11665
	Radio Baghdad, Iraq	7295, 9875
	BSKSA, Saudi Arabia	9705, 9720
	Voice of Kenya	11740
2100	Radio Berlin Int'l., E. Germany	6125
	Radio Baghdad, Iraq	7295
	Radio Canada Int'l. (30)	11880, 15150, 17820
	Radio RSA, South Africa	7295, 9580, 11990
	Radiobras, Brazil	9760
	Voice of Nigeria	15120
	Radio Damascus, Syria(05)	9950, 12085
	Radio Yugoslavia(15)	6100, 7240, 9620
2200	BRT, Belgium	5910
	Radio Mediterranean, Malta(30)	6110
	KUSW, Utah	15580
	Radio New Zealand(45)	15150, 17705
	RAE, Argentina	9690, 11710
	All India Radio	9910, 11620, 11715
	Radio Sofia, Bulgaria	9700, 11720
2300	Radio Berlin Int'l. E. Germany	6070, 6125, 6165
	Radio Korea, South Korea(30)	15575
	Voice of Turkey	9445
	Radio Kiev, Ukraine SSR(30?	7185, 7205, 7260, 11790, 13645, 15180
	Radio Sweden Int'l.	9695
	Radio Japan	7280, 11800, 15195, 15280
	Radio Moscow	5915, 5940, 6000, 6045, 6115, 7115, 7150, 7215, 7310, 11770, 12050, 13665, 15425, 15445, 17700
	Radio Pyongyang, North Korea	11735, 13650

PC

Volunteer Fireman Saves Kids From Burning Van

Volunteer firefighter Gary Cooley was on his way to the San Diego Zoo with his family when he spotted a burning van on Interstate 10, just west of Phoenix, Arizona, and pulled four children from the van, saving their lives.

But the 19-year-old Goodyear, Arizona, Fire Department volunteer doesn't consider himself a hero. "I'm a fireman," he said. "It's my job."

SCAN PUBLIC SERVICE AWARD

Cooley and his family were traveling to San Diego at 2:00 a.m. when a van behind them exploded into flames after being hit by a car.

"All I saw was a ball of fire," Cooley told the *West Valley* (Goodyear, Arizona) *View*. "So I took off running. When I got there I heard screaming from the van."

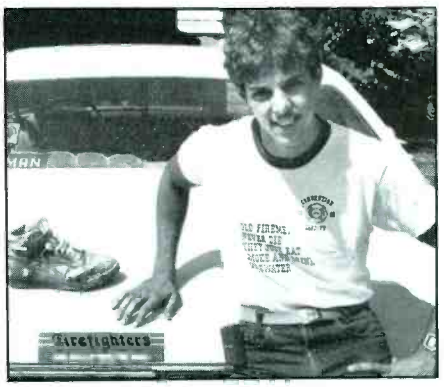
Cooley's mother, Marsha, said that they tried to stop him from going to the van, but he wouldn't listen.

Cooley asked several people standing near the van if anyone was inside, and a woman screamed that her children were in the van.

"The van was still on fire, so I climbed in there," Cooley said.

Cooley, who has been a volunteer firefighter for a year and a half, later estimated that the temperature inside the burning van was about 400 degrees. But he found a child in the passenger seat of the van by feeling around, there was too much smoke to see anything. Cooley burned his foot and leg as he pulled the child out of the seat.

When the first child was out of the van, Cooley heard the screams of other children,



Gary Cooley leans against the car he was driving Saturday morning, the day he received third-degree burns to his foot and calf while rescuing four children from a burning van on Interstate 10 near Buckeye.

and went back into the van to rescue a second child. He tossed the child to someone outside the van and then went back into the burning vehicle.

Gary's father, John, arrived outside the van after Gary has already rescued the first two children. He didn't recognize his son at first, but said that his son knew what to do and would have asked for help if he had needed it.

After saving the second child, Cooley said that he began to fear for his life because he knew that he could die in the fire without the protective gear and breathing equipment he usually wore as a volunteer fireman.

"Every time I came out the door to drop a kid off, I got burned a little more," Cooley told the *View*.

After pulling three children from the burning van, Cooley said the screams stopped, but the woman said that one other child was still in the van.

Cooley returned to the van one more time, feeling around the smoldering debris and smoke.

"I didn't think I could get the last one out," he said. "I just kept thinking those kids were going to burn and how much they would hurt."

Cooley was finally able to find the last child. "I heard crying," he said. "I reached up and opened a blanket and there was a baby in there." He pulled the infant from the van, which exploded a couple of minutes later.

Marsha Cooley said that Gary was limping and blackened by the fire.

"He said, Mom, I saved those kids. I saved those little kids."

Mrs. Cooley said that God must have had something to do with what happened. "I think God placed Gary there to help those children," she says. "I really think those kids would have been burned up if he hadn't been there."

Cooley's fiance, Anita Price, said that she tried to stop Gary from going into the fire, but she is proud of her future husband.

Gary Cooley said that he has wanted to become a professional fireman since he joined the volunteer department.

"Maybe I can do something," he said. "Maybe I can help somebody. I got a great feeling out of it last night."

If he was confronted with the same situation, he said that he would do the same thing again.

For taking the initiative and making those rescues, volunteer firefighter Gary Cooley will receive the SCAN Public Service Award, which consists of a special commendation plaque and a cash prize. For making the nomination, Joseph M. King of Avondale, Arizona, will also receive a commendation plaque.

Congratulations to both of you.

SCAN PHOTO CONTEST WINNERS

Best Appearing

Von Stephens of Washington, North Carolina, is the proud owner of this well laid-out installation. Von listens to three scanners, a Regency HX-1200, Regency MX-5000 and a Regency Z-45.

He also has three antennas: a Kaytownes scanner antenna, Cushcraft A3 beam antenna, Cushcraft AV5 vertical and a 40-meter dipole. Von's accessories include an MFJ antenna selector, Alliance antenna rotator, Kenwood PS50 power supply and a Tenna Phase III PS3 power source. A Kenwood 440S and a Cobra 29LTD CB are also used.

A licensed amateur operator (KB4TQU), Von also has a code keyer for those times when words just aren't enough.

Best Equipped

Tommy Sullivan of Cuyahoga Falls, Ohio, is an active scanner monitor and shortwave listener, and enjoys many different aspects of the communications hobby with this well-equipped shack.

Tommy uses a Regency D310 for monitoring local police, ambulance, utility and railroad transmissions. He listens to aircraft and the Goodyear blimp (when it is in nearby Akron) on a Regency MX-4200. A Radio Shack VHF/UHF air scanner antenna is used with these two scanners. (Not shown is a Realistic Pro-26 that Tommy keeps in his lunchbox so he can monitor local police while he's at work.)

A Radio Shack TRC-57 and a TRC-55 are used for 11-meter listening. Both of these radios are used with an Avanti Astroplane antenna.

For shortwave listening, Tommy uses a Hallicrafters S-120 which, he points out, was

(Continued on page 76)

Radio Remembered

A Loving Look Back In Time

BY ALICE BRANNIGAN

Hard to believe, but in 1948 the FCC had to institute a freeze on new TV station applications. By the end of the 1940's there were approximately 107 TV broadcasters on the twelve available channels, with a maximum of only 377 more possible. The FCC suggested the creation of an additional group of channels between 470 and 890 MHz, to be known as UHF TV Channels 14 through 83. This would permit the TV service to eventually expand to a total of 2000 stations.

The new UHF TV band would allow the FCC freeze to be lifted. Problem was, that when the new UHF channels were proposed, there was too little information available concerning the usefulness of UHF for TV broadcasting, although some very basic tests had been made. RCA decided it would institute a full-scale field test, and build the first operating UHF TV broadcast station atop Success Hill, two miles northeast of Bridgeport, CT. This NBC-affiliated station was licensed by the FCC with experimental callsign KC2XAK, and used a channel that ran from 529 to 535 MHz (video on 530.25 MHz, audio on 534.75 MHz), which is just slightly askew of present-day UHF TV Channel 24 (530 to 536 MHz).

UHF TV converters and tuners were installed in about 100 homes and KC2XAK began its experimental broadcasts in December of 1949. Soon after, a regular schedule of programs began to be relayed to KC2XAK from WNBT, the NBC affiliate (Channel 4) in New York City. These were sent over a 2,000 MHz link from a transmitter on the 85th floor of the Empire State Building. KC2XAK picked up the link with a 6-ft. parabolic dish located on the 180-ft. level of its 250 ft. tower. The top of the tower was 400 ft. above sea level.

The antenna itself was similar to the familiar FM pylon type, measuring 40 ft. in height. This was a horizontally polarized omnidirectional antenna with 20 db gain (over a dipole.)

The video transmitter put out 1 kW on peaks; the audio transmitter 500 watts. Both transmitters used 4X150A tubes in parallel. Tubular-type twin-lead transmission line was employed between the transmitters and antenna array.

Tests showed excellent results, with the local station providing greatly improved signals over the VHF stations making the 45-mile trip from New York City. The good results obtained brought about the UHF TV channel allocations in March of 1951, with the freeze lifted in the fall of 1952.

Station KC2XAK was the nation's first UHF TV station to carry a regular program schedule. Originally, the proposed UHF TV channels were seen as the portion of the spectrum to be eventually used for color TV.

KC2XAK was therefore the first UHF-TV station in the U.S. to operate on a regular schedule. That was twenty nine years ago!

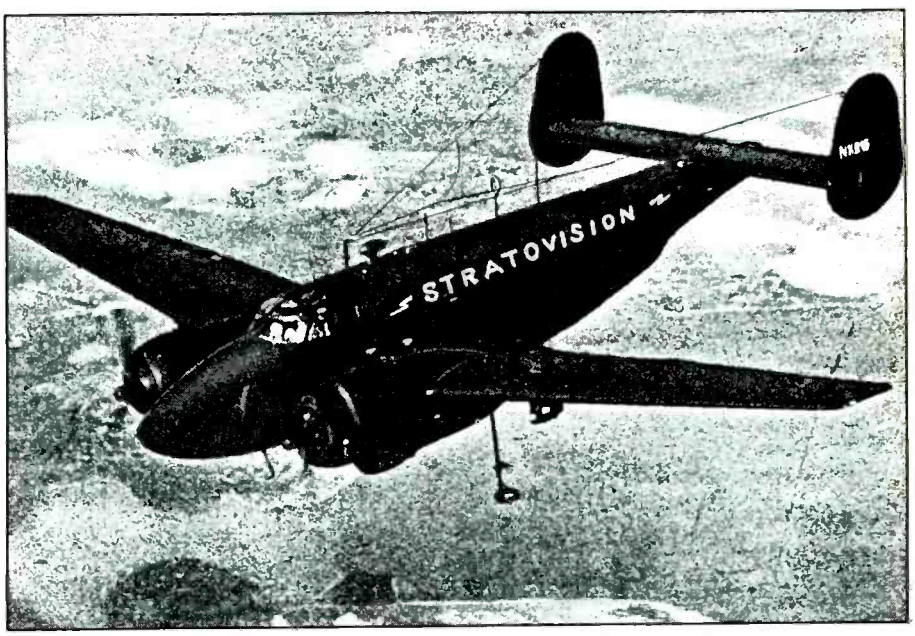
TV or Not TV

While we are on the subject of old-timey TV (a topic I've sadly neglected, many readers have pointed out), I am reminded by reader Arthur Kleiner, Levittown, NY of *Stratovision*. This was a very noble, novel, and ambitious concept for providing coast-to-coast TV coverage in the days when such a proposal was still a dream.

In July of 1945, Westinghouse Radio engineers suggested the possibilities of outfitting an aircraft with FM and TV transmitters. They felt that if the plane could fly in tight circles at an altitude of 25,000 to 30,000 feet, it would be able to receive distant stations on one channel and rebroadcast them great distances over another channel.

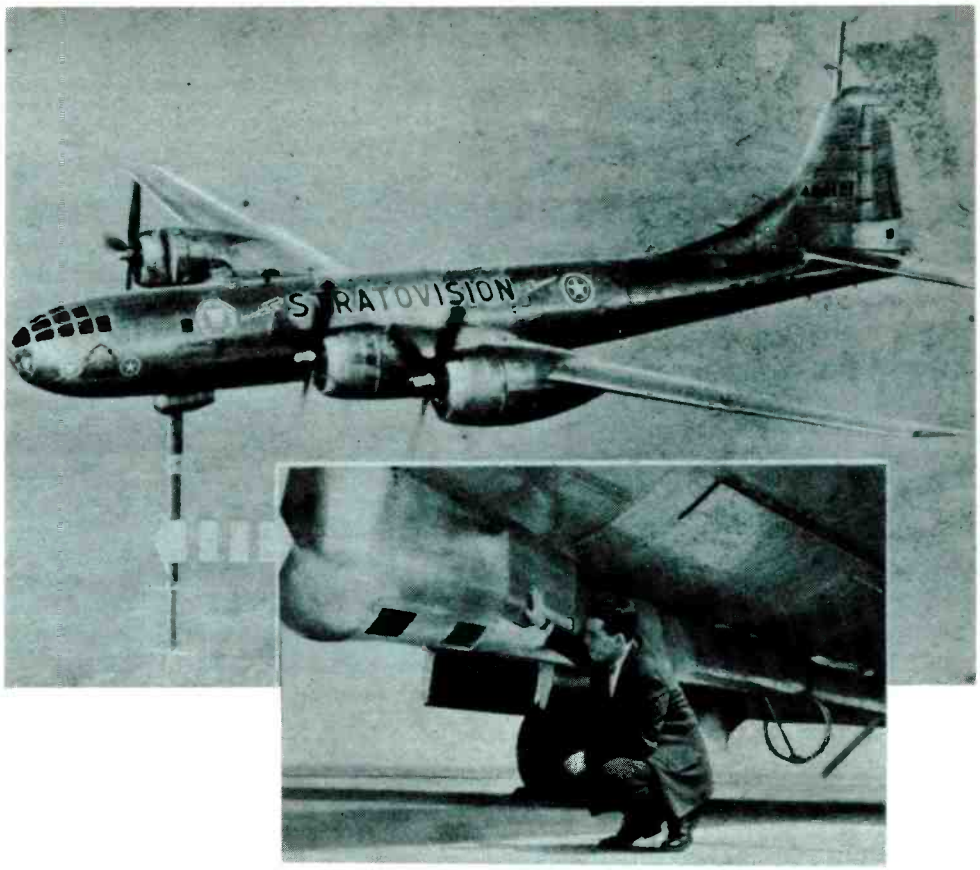
Dubbed *Stratovision*, Westinghouse contacted officials of the Glen L. Martin Aircraft Co. and asked for their opinions. Martin's engineers agreed to work with Westinghouse, and within eight months they had taken a war surplus Martin bomber and equipped it with a 250 watt FM transmitter operating on 107.5 MHz, also a TV transmitter, plus FM and TV receivers. The callsign was W10XWB.

The first ***Stratovision*** flights were encouraging, sending the FM and TV signals



Early Stratovision experiments were via this converted Martin medium bomber.

Later Stratovision experiments were conducted from this B-29 bomber using the callsign W10XWB. Receiving antennas were on the plane's tail, while the transmitting antenna extends below the nose. The inset shows how the transmitting antenna was retracted by a hydraulic system before landing.



over a radius of 240 miles. Early flights were over three main courses: from the Martin Airport (Baltimore) over Wilmington, Philadelphia, and New York to New Haven, and return non-stop; over Washington and Richmond to Rocky Mount, NC and return non-stop; and Baltimore to Detroit via Pittsburgh (with stopovers in Detroit.)

It was projected that eight *Stratovision* planes could be used to form a coast-to-coast relay network, while fourteen planes would get TV signals to more than 75% of the nation's population. The antennas used for the early tests were fourfold. First, there was a ten-foot aluminum tubing mast with dual fifteen-foot loops. This was the FM transmitting antenna which was hinged in the bomb bay and lowered into place when aloft. A second underside antenna was used for receiving purposes. A third, atop the aircraft, was used for communications. The fourth, mounted on the ten-foot mast was used for TV transmissions on 515 MHz.

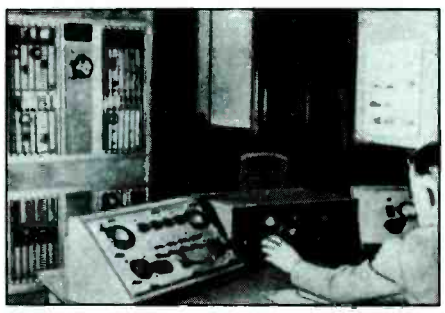
The early tests were sufficiently encouraging to envision the ultimate *Stratovision* aircraft as being larger and more sophisticated than the medium bomber first used. By 1948, a converted B-29 bomber had been obtained and circled at 25,500 feet over Pittsburgh, relaying from Baltimore a TV program that originated in Philadelphia. Reception was reported from as far south as Roanoke, VA and as far north as Cortland, NY. While the picture quality was a bit fuzzy in the fringe signal areas, closer in, the quality was fine. The USAF was also experimenting with VHF TV aircraft transmissions during the late 1940's. Although *Stratovision* itself was a success, by the time it had been developed to the point where it was practical, technology had passed it by and a coast-to-coast system of terrestrial cable and microwave relay stations had made the system obsolete.

The concept was put to rest for about twenty years when it came alive again as the U.S. military flew the *Blue Eagle* TV broadcasting plane (a Lockheed *Constellation*) over the city of Saigon.

Speaking of Flying

In the rugged interior of Australia, where neighbors live 100 miles apart, doctors are on round-the-clock duty. The famous Australian flying doctor service, via radio communications, is in contact with many of the residents and can send out medics on short notice.

As we look at this service as it was forty years ago, no spot in Australia was more than 300 miles from a flying doctor. There was a network of medic stations running 150 to 350 watts, AM and CW modes, on various frequencies, including: 1600, 2020, 2760, 4010, 4030, 4880, 4980, 5110, 5300, 5355, 5360, 5410, 6840, 6880, and 6960 kHz.



A network control system of the Australian Flying Doctor Service as it looked about forty years ago.

These stations included 8JO (now VKJ) in Meekatharra, 8SC (now VKI) in Port Hedland, 8SI (now VKF) in Wyndham), 8UB (now VJQ) in Kalgoorlie, 8US (now VJD) in Alice Springs, VJY in Cloncurry, VJC in Broken Hill, and VJJ in Charlesville. Then, too, some 250 individuals and families living in the outback had stations on these frequencies. In the event of a medical emergency, the radios would be used to contact the AAMS (Australian Aerial Medical Service; now known as the Royal Flying Doctor Service) and a doctor would be promptly sent out in a small plane.

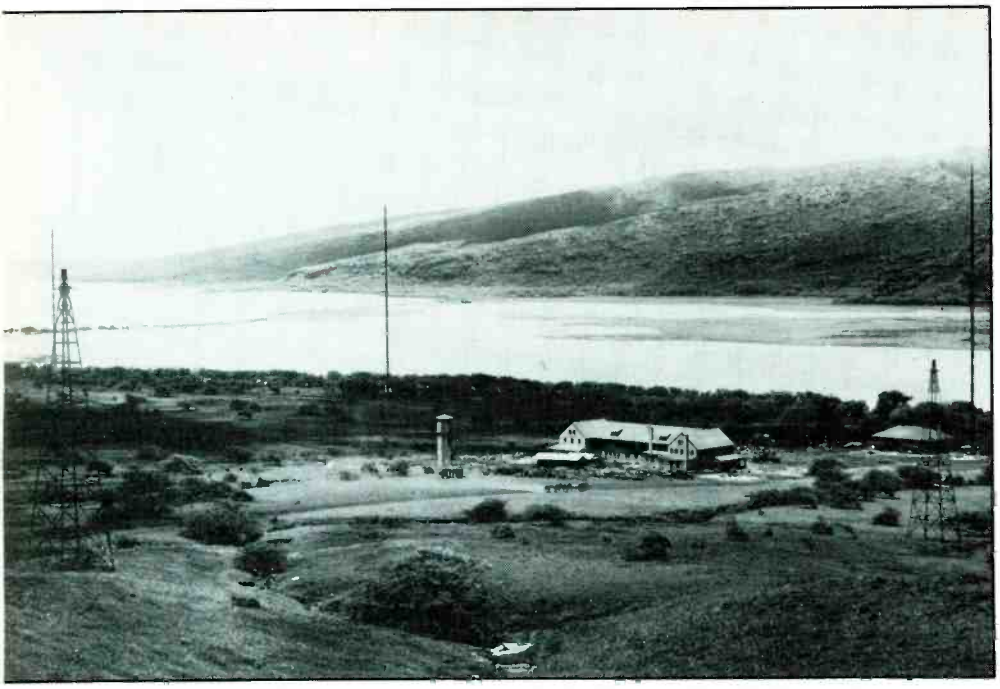
The communications equipment used in the outback was designed to be so simple that any member of a family (even a child) could use it, and it was portable so that it might be easily moved from one location to another. As it turned out, the transceivers quickly became the telephones of the outback settlers. The government even permitted them to be used for sending telegrams (via the AAMS base stations) to any point in the world.

This network became much like a forerunner of CB radio, with people throughout the outback using it for general chit-chat, meeting new friends, and passing the time when they got lonely. Still, it has (to this day) remained primarily a medical emergency network. The gossiping and "over the fence" small talk ends instantly when someone calls for help.

Today, the network has some additional base stations, and with the exception of 1600 kHz, all of the old frequencies (plus more than twenty-five additional) are in use around the nation. And there are many more than the original 250 remote outback settlers in the networks.

A Mystery Photo

A reader in Winona, MN sent along a puzzling photo that cries out for identification, although it's a tough one. It's a photo that's yellowing with age. The back of the



A real mystery photo, as described in the text. Any ideas, gang?

photo was imprinted to turn it into a postcard; this imprinting is in English.

The scene in the photo shows a water tank (center of photo) near a large three-story brick building. Off to the right of the photo is a single-story house. Near the larger building are six horses and possibly some cattle.

A large body of water and a hilly area are in the background. There are hills in the foreground, too, and atop the hill in the left foreground is a lattice tower supporting what appears (under high magnification) to be a phased omnidirectional VHF array. Another lattice tower is at the right of the photo. Two taller radio masts are near the shoreline, one is adjacent to the smaller building at the right. Under magnification, both of these masts appear to be heavily guyed, and consist of alternating wide/narrow sections terminating with apparent VHF omnidirectional antennas at the tops.

The fact that the photo appears to be rather old makes me question that any of these towers and masts are related to VHF. Even though VHF antennas started showing up in photos from the 1940's, this photo seems to be older than that.

Correct Me If I'm Wrong

Cam Currier, Staff Announcer at station KIEV in Glendale, CA dropped me a letter to update several items that have appeared here during recent issues. He notes that we had shown a photo of station KGFH in Glendale, mentioning that it was "short lived." Cam says that station KIEV (870 kHz, 5 kW) took up where KGFH left off and has happily occupied studios in the Glendale Hotel for fifty seven years. There are still two large towers behind the building that are used on occasion (with a 1 kW transmitter) for stand-by purposes. The main KIEV transmitter is a mile away and tied to the studio via STL link. A new antenna system is being built for daytime 10 kW directional use.

Cam also notes our mention of Sister Aimee Semple McPherson's station, KFSG, became KRKD in the 1940's. While that was true, Cam points out that KFSG became KRKD every night at midnight through the 1960's on a time-share basis. At 6 p.m. every night, KRKD would sign-off and become KFSG, with six hours of preaching from the Angelus Temple. KRKD (1150 kHz) is now KIIS-AM, while KFSG (as we noted) is on FM at 96.3 MHz.

The TV station, W6XAO, we recently monitored as having been of historical importance, did become KNXT, as I mentioned. Cam added the information that KNXT later became KCBS-TV and that the station is now located atop Mt. Wilson. The old W6XAO site became part of the communications center of the Los Angeles Police Department.

Thanks, Cam, for updating those items. I don't have a photo available of the CBS-TV spread on Mt. Wilson. Best I could come up with on the spur of the moment was a 1950's photo of NBC's Channel 4 TV installation on 6,000 ft. Mt. Wilson, back in the days when the station was known as KNBH. Not all of the towers in this photo are associated with the KNBH installation.

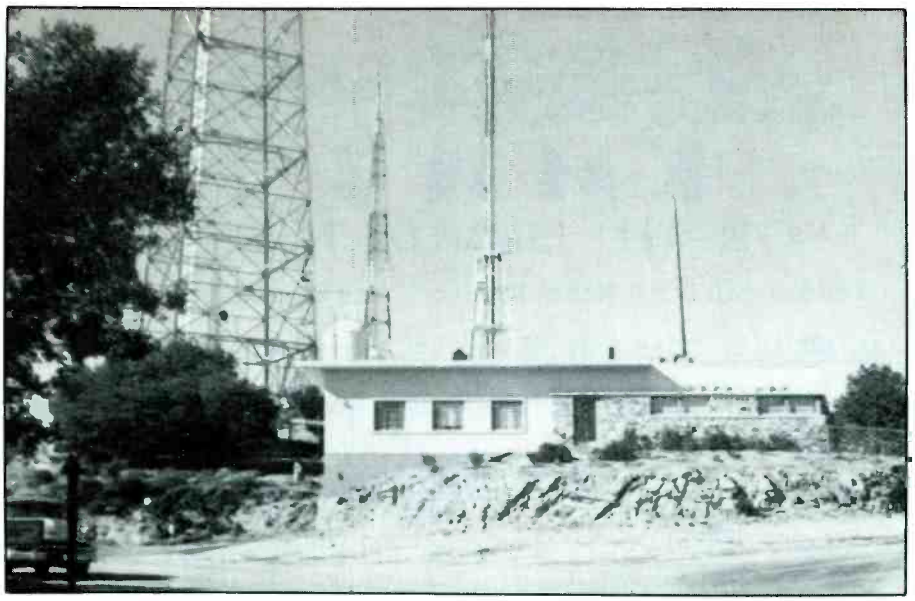
Old Trusty

When station KMMJ opened for business on 1310 kHz in 1926, running 500 watts from Clay Center, NE it called itself "Old Trusty." That slogan came from the products produced by the licensee, The M.M. Johnson Co. They produced Old Trusty brand incubators and brooders. The station was run by a Johnson employee, James Gwynn, known on the ham bands as 9BDK.

Not long after KMMJ went on the air, it changed frequencies to 1050 kHz, but by November of that year it changed to 740 kHz. Upping its power to 1 kW, it remained on 740 kHz (even though a 1936 change of licenses name to KMMJ, Inc., and a later change of location to Grand Island, NE) until the major pre-WWII frequency shuffle caused it to shift to 750 kHz. Today, still on 750 kHz, the station runs 10 kW.

Larry Flegle, KC4AXQ, who collects old radio memorabilia, furnished us with a 1926 verification from KMMJ displaying a wonderful letterhead showing a photo of M.M. Johnson, who gave his initials to the callsign of the station. It also shows a photo of one

Atop Mt. Wilson in the early 1950's we see the transmitter of KNBH, NBC-TV's Channel 4 in Los Angeles.



A photo of Mt. Wilson taken only a few years after the other one shown this month shows the same view, when NBC's TV station went under the callsign KRCA. Other stations shown in this photo include KHJ, KABC, KLAC, KCOP, KTTV and KNXT.

large St. Bernard dog named Old Trusty. Larry also included a January, 1926 KMMJ sked showing programs of local talent, musical interludes by the Old Trusty Orchestra, Snoddy's Orchestra, the Saronville Variety Orchestra, and the Victory Orchestra. A "factory and office program" was broadcast almost daily.

Tom Kneitel donated a QSL dated 1948 from KMMJ, not for the station itself, but for KMMJ's shortwave relay transmitter, KCHD on 30.82 MHz. Tom says his station logs show that on the morning of November 21, there was a skip opening that brought KCHD in with a solid signal as it relayed KMMJ's programming. KCHD was licensed as a remote pickup station and QSL'd very promptly using a KMMJ QSL card.

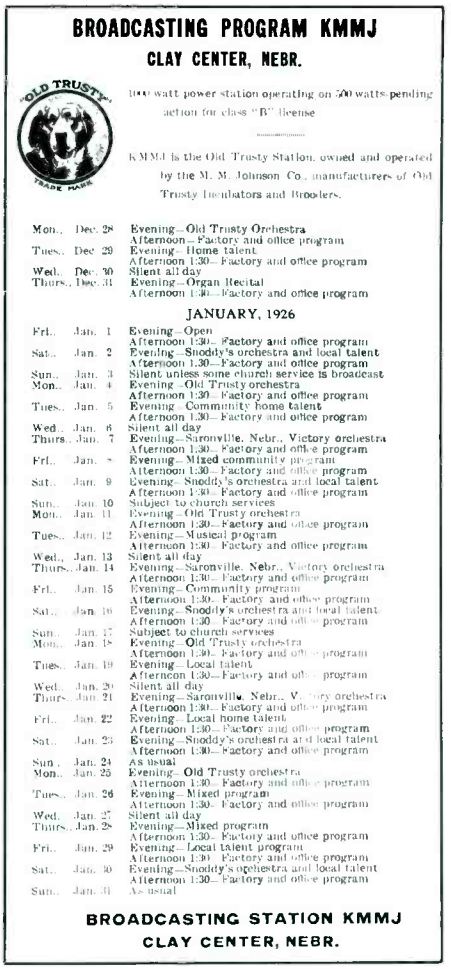
Canadian Shortwaver

Donald M. Currie, Vancouver, BC mentions that last July we ran a QSL card from mediumwave station CJCA in Edmonton, Alberta. He says that it brought back memories of the 1950's, when CJCA operated a 200 watt experimental shortwave relay station on 9540 kHz. The now-extinct station, known as VE9AI, was unusual in that it operated in the 31 meter band while all of the other low-powered Canadian shortwave relay stations traditionally hang out in the 49 meter band.

Asks For Help

Ronald Jack, of 116 Fir Ave., Hinton, Alberta TOE-1BO, writes to say that he is researching two cutters (vessels) that were with the United States Revenue Cutter Service (forerunner of the USCG.) He's looking for information on the *USRC Manning* (its 1916 callsign was GVFK), and the *USRC Bear* (1916 callsign GVDM). The *Manning* had a home port of Astoria, OR while the *Bear* sailed from San Diego. He'd also like to know the locations of USRC shore transmitter sites on the West Coast, as well as information on the wireless equipment used aboard the cutters.

My own digging would lead me to believe that the *Bear* eventually used the callsign NRB, then NEXK, and ultimately NIJS. It was a sailing vessel built in 1874 that was commissioned by the U.S. Navy in 1884. A year later it joined the USRC Service, sailing with the USRCS and USCG until 1929. It



BROADCASTING PROGRAM KMMJ

CLAY CENTER, NEBR.

"OLD TRUSTY" TRADE MARK

1000 watt power station operating on 500 watts pending action for class "B" license

KMMJ is the Old Trusty Station, owned and operated by the M. M. Johnson Co., manufacturers of Old Trusty Incubators and Brooders.

Mon.,	Dec. 28	Evening—Old Trusty Orchestra Afternoon—Factory and office program
Tues.,	Dec. 29	Evening—Home talent Afternoon 1:30—Factory and office program
Wed.,	Dec. 30	Silent all day
Thurs.,	Dec. 31	Evening—Organ Recital Afternoon 1:30—Factory and office program

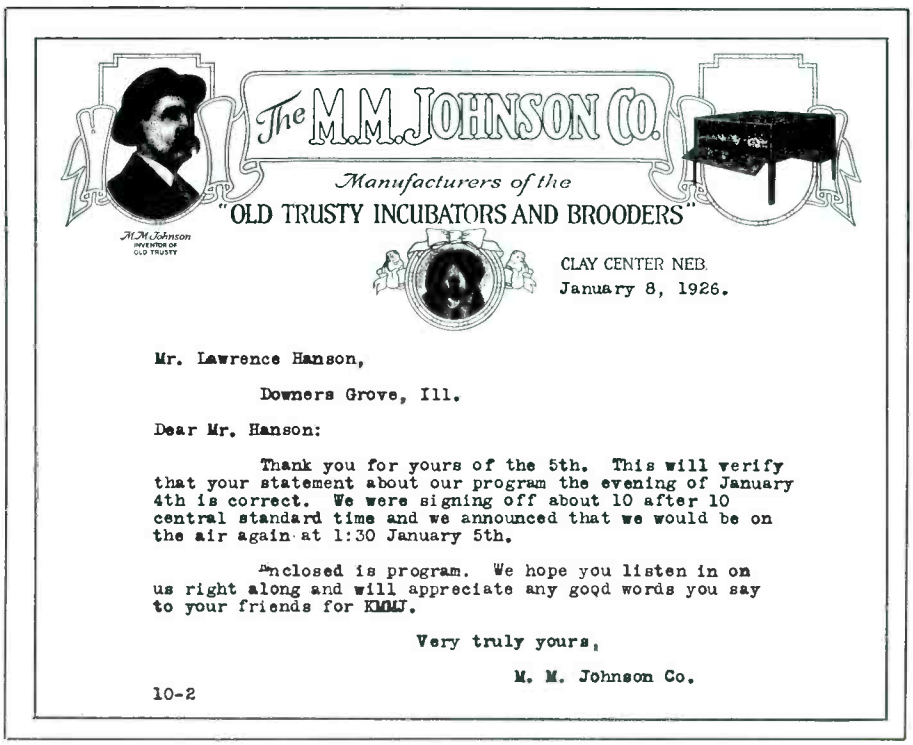
JANUARY, 1926

Fri.,	Jan. 1	Evening—Open Afternoon 1:30—Factory and office program
Sat.,	Jan. 2	Evening—Snoddy's orchestra and local talent Afternoon 1:30—Factory and office program
Sun.,	Jan. 3	Silent unless some church service is broadcast
Mon.,	Jan. 4	Evening—Old Trusty orchestra Afternoon 1:30—Factory and office program
Tues.,	Jan. 5	Evening—Community home talent Afternoon 1:30—Factory and office program
Wed.,	Jan. 6	Silent all day
Thurs.,	Jan. 7	Evening—Saronville, Nebr., Victory orchestra Afternoon 1:30—Factory and office program
Fri.,	Jan. 8	Evening—Mixed community program Afternoon 1:30—Factory and office program
Sat.,	Jan. 9	Evening—Snoddy's orchestra and local talent Afternoon 1:30—Factory and office program
Sun.,	Jan. 10	Subject to church services
Mon.,	Jan. 11	Evening—Old Trusty orchestra Afternoon 1:30—Factory and office program
Tues.,	Jan. 12	Evening—Musical program Afternoon 1:30—Factory and office program
Wed.,	Jan. 13	Silent all day
Thurs.,	Jan. 14	Evening—Saronville, Nebr., Victory orchestra Afternoon 1:30—Factory and office program
Fri.,	Jan. 15	Evening—Community program Afternoon 1:30—Factory and office program
Sat.,	Jan. 16	Evening—Snoddy's orchestra and local talent Afternoon 1:30—Factory and office program
Sun.,	Jan. 17	Subject to church services
Mon.,	Jan. 18	Evening—Old Trusty orchestra Afternoon 1:30—Factory and office program
Tues.,	Jan. 19	Evening—Local talent Afternoon 1:30—Factory and office program
Wed.,	Jan. 20	Silent all day
Thurs.,	Jan. 21	Evening—Saronville, Nebr., Victory orchestra Afternoon 1:30—Factory and office program
Fri.,	Jan. 22	Evening—Local home talent Afternoon 1:30—Factory and office program
Sat.,	Jan. 23	Evening—Snoddy's orchestra and local talent Afternoon 1:30—Factory and office program
Sun.,	Jan. 24	As usual
Mon.,	Jan. 25	Evening—Old Trusty orchestra Afternoon 1:30—Factory and office program
Tues.,	Jan. 26	Evening—Mixed program Afternoon 1:30—Factory and office program
Wed.,	Jan. 27	Silent all day
Thurs.,	Jan. 28	Evening—Mixed program Afternoon 1:30—Factory and office program
Fri.,	Jan. 29	Evening—Local talent program Afternoon 1:30—Factory and office program
Sat.,	Jan. 30	Evening—Snoddy's orchestra and local talent Afternoon 1:30—Factory and office program
Sun.,	Jan. 31	As usual

BROADCASTING STATION KMMJ

CLAY CENTER, NEBR.

KMMJ's sked, as it was 62 years ago.



The M. M. JOHNSON CO.

Manufacturers of the

"OLD TRUSTY INCUBATORS AND BROODERS"

M. M. Johnson
INVENTOR OF OLD TRUSTY

CLAY CENTER NEB.
January 8, 1926.

Mr. Lawrence Hanson,

Downers Grove, Ill.

Dear Mr. Hanson:

Thank you for yours of the 5th. This will verify that your statement about our program the evening of January 4th is correct. We were signing off about 10 after 10 central standard time and we announced that we would be on the air again at 1:30 January 5th.

Enclosed is program. We hope you listen in on us right along and will appreciate any good words you say to your friends for KMMJ.

Very truly yours,

M. M. Johnson Co.

10-2

A 1926 veri letter form KMMJ in Nebraska. Is that letterhead great, or what?

Verification From
RELAY TRANSMITTER KCHD ON 30.82 MC.
operated by RADIO STATION

KMMJ

GRAND ISLAND, NEBR

Your Report of Reception of our Signal at
:45 AM CST M on NOV 21, 1948 agrees with
our Log. Thank you very much for the report.

Norval J. Larsen
NORVAL J. LARSEN, CHIEF ENGR

KMMJ's 30.82 MHz FM relay station (KCHD) sent Tom Kneitel this QSL in 1948 when he picked up the signals via skip propagation.

was used as a museum in Oakland, CA and then (as *Bear of Oakland*) sailed to the Antarctic with Admiral Richard Byrd from 1933 to 1935. In 1939 it was commissioned in the USN as *Bear (AG-29)*, serving mostly in the Antarctic and Arctic waters until it was decommissioned in May of 1944.

The *USRC Manning* used the callsign NRN after it was GVFK, then later NOCG, and ultimately NRCM. This cruising cutter was built for the USRC Service and commissioned in January of 1898. She was built to look much like a clipper-cutter, and (with her four sister ships) was the last cutter ever rigged for sail. The *Manning* served with the USN in Cuba for six months in 1898 then worked as a USRC, in the Lifesaving Service, and the International Ice Patrol. The government decommissioned the *Manning* in May of 1930 and sold her to a Charles L. Jording, of Baltimore, MD.

If any readers can supply any additional information needed by Ronald, please communicate directly with him at the address shown. Your help will be appreciated.

Old Time Tapes

A really fascinating tape cassette of WWII propaganda broadcasts was received by the column recently. This is a 60 minute tape of original broadcasts by Tokyo Rose, Ezra Pound, Douglas (Paul Revere) Chandler, Lord Haw Haw, and Radio Berlin. Very exciting stuff, sent to us (and now being sold) by Dunlevy-Wilson Research Services, 4548 Auburn Blvd., Suite 231, Sacramento, CA 95841.

Looking forward to hooking up with you next month. Hang in there, Spring is almost here!

Day and Night
9540 kc

VE9AI

200 Watts

EDMONTON ALBERTA CANADA

We acknowledge with thanks your communication of

August 19th, 1955.

and are pleased to learn that our signal came through in your locality.

Dial 930 CJCA
EDMONTON

REMARKS:

This will verify your report of reception on August 19th, 1955. We are always pleased to hear from our listeners, and trust we may hear from you again.

VE9AI was a Canadian experimental shortwave broadcaster in the 9 MHz band some thirty years ago.

Equipment Report:
The New Cobra SR-15 Handheld Scanner

One hundred channels is more frequencies to hold in your hand than you're probably used to dealing with. It wasn't that long ago that fancy base station programmables were coming through with only sixteen channels. Now comes Cobra, with their small SR-15, a ten ounce scanner that's only six inches high, an inch deep, and less than three inches wide. Hard to believe.

Still, it's here, and it's not skimping on the features it offers either. The overall frequency range of this scanner is 29 to 54 MHz, 108 to 174 MHz, 406 to 512 MHz. Note that this range includes four ham bands, the VHF aero band, all public safety, business/industrial/transportation, and federal bands. Few scanners seem to cover the important 406 to 410 MHz portion of the 406 to 420 MHz federal band, and it was a pleasant surprise to note that the Cobra SR-15 does provide these frequencies.

Basic features include a channing speed of fifteen channels per second, priority channel, selectable 3-second delay that can be applied to individual channels, five banks of channels, a lockout feature that will temporarily disable individual frequencies or banks, full scan/search with a *hold* button to stop the search, and manual channel step-through.

The Cobra SR-15 also offers a key lock that prevents any of the panel button from causing accidental entries. There's a button which provides a light that permits viewing the LCD panel in darkness. On the top of the unit there's the power on/off switch, a battery charge light, an earphone jack, and the scanner's BNC-type antenna connector. The set is supplied with a 6½ inch rubberized antenna, a rechargeable battery pack, a battery charger, an earphone, and sturdy black leather carrying case that has a belt loop.

The Cobra SR-15 is housed in a high-impact ABS case with a metal faceplate. The LCD display indicates the frequency, channel number, and channel bank being received, also status information relating to lockout, delay, priority, and programming errors.

In other words, they've managed to cram a full featured scanner into a package that's about as small as we have yet seen or any handheld unit, including those with far fewer features. Programming the SR-15 is cinchy; even if you didn't have the instruction book you could probably figure it out for yourself in a few minutes, and the *beep* when you press the programming buttons is short and low.

As the Cobra SR-15 scans, the frequency LCD vanishes and the channel numbers race by as the channel-bank indicators flash. When it hits upon an active frequency, the frequency information comes up on the screen. When in the manual or search modes, the frequency readout remains visible.

In actual use, the Cobra SR-15 is user friendly, the audio quality is good, the volume can be turned up to louder than you'd probably ever need. As with any handheld using a small whip antenna, reception is best when the set is held in a vertical position. As you tilt it over, weaker signals start to drop out when you get beyond 45°.

The Cobra was sensitive enough to bring in area mobiles and bases with gusto, and aircraft operating in the VHF aero band could be copies well off into the distance. A NOAA weather station located 40 miles away was able to be copied using the small whip, although when the scanner was hooked to a rooftop antenna, the weather station came booming in.

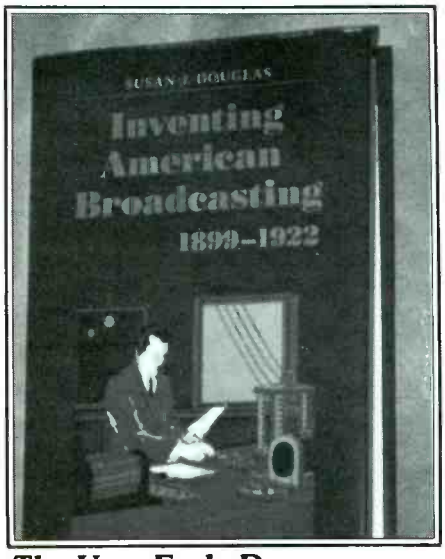
Although the instruction book mentions the possibility of *birdies* in the unit, I haven't had any problems with the unwanted internally-generated signals.

The Cobra SR-15 is an impressive palmful of programmable scanner—small, versatile, efficient, and possessed of enough frequency range and features to keep even the fussiest nit-picker satisfied. The unit sells in the $210 price range. It comes from the Cobra Consumer Electronics Group, Dynascan Corp., 6500 West Cortland Street, Chicago, IL 60635. **PC**

Review by Lewis Keseberg, KCA6PK

BOOKS YOU'LL LIKE!

BY R. L. SLATTERY



The Very Early Days

When our government began issuing broadcasting licenses late in 1921, the public was made aware that one more technological miracle had a practical application. Of course, this technology didn't come into being at the snap of a finger, it had been in the oven for a number of years before it rose to meet the entertainment needs of the general public.

Susan J. Douglas' new book, *Inventing American Broadcasting, 1899-1922*, tells about the more than twenty years of radio before the official start of broadcasting—the amazing inventions, curious applications, shrewd business moves, the personalities, companies, institutions, and ideas that managed to take a few sparks jumping across a gap and transform them into what became radio broadcasting (and eventually color TV broadcasting, FM multiplex, AM stereo, etc.)

Douglas picks up the history with Marconi in 1899 as he demonstrated his wireless equipment during the America's Cup yacht race, then attempted to sell it to steamship companies and news agencies. From there, it's a rich and fascinating history, overflowing with vignettes of the people and incidents that alternately cooperated and clashed as things fell into place, one-by-one, on the way to the creating the broadcast industry.

Various chapters cover individual inventors, military applications, successes and failures, ham radio, the *Titanic* disaster, radio regulations, the rise of large corporations, and the social construction of American broadcasting.

The text is amplified with more than twenty historic photos and illustrations, most being published for the first time in many years. This is a hardcover book (with a dust jacket.) In all, 362 pages of information, including a detailed index.

The author is an associate professor of media and American studies. The book is quite comprehensive, and thoroughly engrossing. It provides a very perceptive insight into those event-filled formulative early years of wireless communications as so many people tried to figure out the things that might be done with the revolutionary technology.

Douglas' book is $29.50, and published by the Johns Hopkins University Press, 701 West 40th St., Suite 275, Baltimore, MD 21211. It is highly recommended for all who wonder whence modern telecommunications and broadcasting came.

Receivers Galore

Many communications hobbyists look back on the era of vacuum tube radios (1932 to 1981) with a distinctly special fondness.

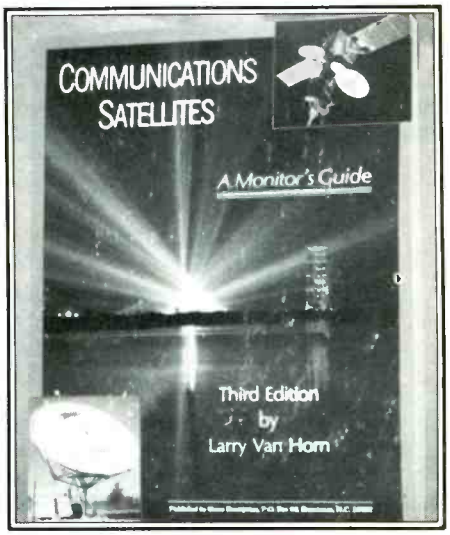
Ray Moore has tenderly collected a massive amount of data on American manufactured superheterodyne general coverage communications receivers made during the (almost) fifty years such equipment was produced with vacuum tubes. In the popular vernacular, these were the ham and SWL receivers that were used by people such as you and I. The book is entitled *Communications Receivers*.

Moore's 112-page large-format book is a celebration of this equipment, overflowing with interior and exterior photos, performance features, and general commentary about the different models and the companies that produced them. This not only means the famous manufacturers like R.M.E., Hallicrafters, Collins, Morrow, Hammarlund, National, McMurdo Silver, and Heath, but also the obscure and almost-forgotten companies, the likes of Guthman, Federated Purchaser, and Patterson. Sure doesn't look like Ray overlooked anybody.

The book kicks off with a general history of the develoment of these receivers and the features they contained. It then goes into a company-by-company directory format, according to each individual company. Some historic information on the individual company is given, followed by separate detailed listings and specs for each known model. For instance, the Hallicrafters section starts off with the H-13, Z-13, and S-1 and goes beyond the model S-210. Hallicrafters begins on page 35 and ends on page 58, and includes twelve pages of photos.

It's the most complete guide I've ever seen for this type of equipment. The author has far exceeded producing a basic compendium of statistics, facts, and photos. It's easy to see that this book (which is a very limited edition) was put together as a work of love from information the author has carefully assembled and researched over a lifetime. Ray Moore, is, in fact, an avid DX buff whose interest in this equipment goes back into the 1930's.

This book is $14.95 (plus $2 postage/handling to the USA/Canada) from RSM Communications, P.O. Box 218, Norwood, MA 02062. We loved every page!



Bud Lite, Miller Lite, Satte Lite

Larry Van Horn's excellent *Communications Satellites* book has just been greatly re-

vised and expanded into an all-new 255-page 3rd Edition. This is the monitoring enthusiasts guide and directory to the operating frequencies and other details relating to surveillance, military, tactical, oceanographic, ham, scientific, weather, private, navigational, broadcast, and spy satellites—even manned space shots and deep space probes.

Van Horn opens his book with valuable information on how, where, when to tune in satellite communications and the satellite monitoring hobby in general—the antennas, the hardware, etc. There's a complete glossary of words, information on satellite channelization band plans, specs, skeds, transponder identification, orbits, positions, purposes of the various "birds," ground stations, transmission modes, and other details. Since many of these frequencies fall within the tuning range of modern scanners and communications receivers, most SWL's, scanner fans, and hams already have a leg up on getting started in this rapidly growing aspect of monitoring.

There are several very useful appendices, including a frequency cross-reference starting out with 1500 kHz and extending up to 563,300 MHz. This by-frequency listing covers virtually all known American and foreign satellites, showing the name of the satellite, country of origin, use, and (in many instances) the transmission modes. It's akin to being the *White's Radio Log* of space insofar as its appeal and usefulness to a monitor.

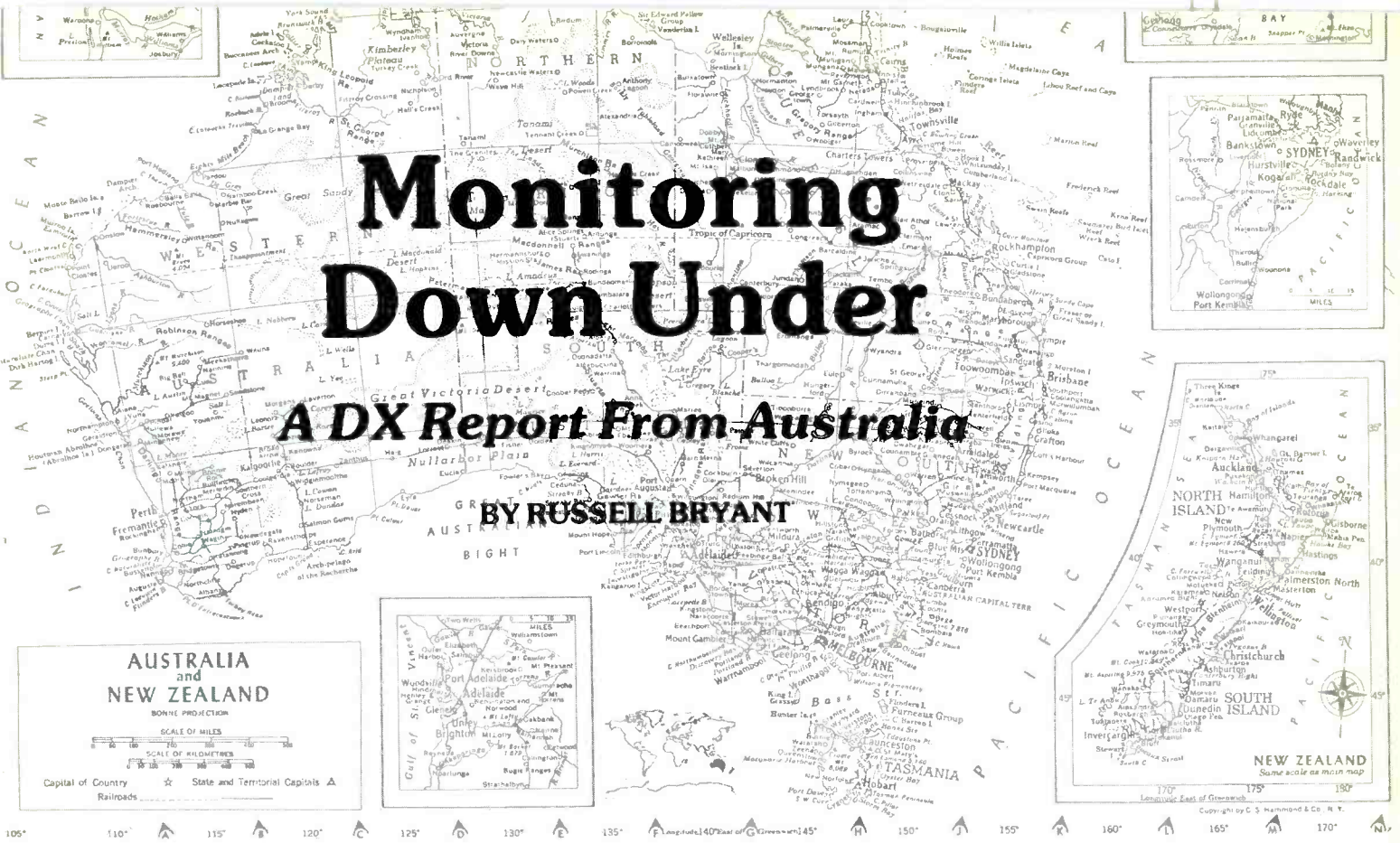
We remember the First Edition of Van Horn's book and how well he updated and expanded it into the Second Edition. This field is expanding very rapidly and it wasn't long before it became apparent that there were so many new satellites in operation, and so much new information found out about previously existing satellites, that this new Third Edition was necessary. There are photos, charts, tables, and illustrations but the text and thousands of frequency listings are the core of this valuable reference guide. As in previous editions, there's no "filler" material here. It's jam-packed with no-nonsense "hard" information that is not only very useful, but is the only source we have ever come across for much of the information presented on military, tactical, espionage, and other offbeat satellites.

Communications Satellites, new Third Edition, is available by mail at $14.92 plus $2 postage/handling to addresses in USA/Canada/APO/FPO from CRB Research, P.O. Box 56, Commack, NY 11725 (N.Y. State residents add sales tax.)

Monitoring Down Under

A DX Report From Australia

BY RUSSELL BRYANT



As the saying goes: "It's a small world." The hobby of DX'ing and SWL makes it even smaller.

Australia is no exception. The hobby of monitoring the HF, VHF, and UHF bands is alive and well down under. This article is an endeavor to give a concise and accurate idea of what can be heard and where Australian monitors, DX'ers and SWL's listen.

The use of the radio spectrum is basically the same in Australia as it is in the U.S. The major difference is the low band VHF allocation. In the U.S. and the Americas in general, the 30 MHz to 50 MHz band is used; in Australia the band between 68 MHz and 88 MHz is used.

Commencing with the HF frequencies at 2 MHz and finishing with the SHF frequencies at 2 GHz, a break down will be given, band by band, of what is where and what you can expect to hear. The HF frequencies will provide the most listening enjoyment from outside Australia, however, if visiting our shores, the VHF and UHF will be most useful.

The High Frequency Band

2 MHz to 30 MHz. (All examples are in USB.)

2182	Marine Coast Stations— emergency and calling
2201	Marine Coast Stations—calling
2524	Marine Coast Stations—emergency and calling
3732	New South Wales Police—intrastate calling
3752	New South Wales Police—interstate calling
4560	New South Wales Police—intrastate calling
4055	Royal Flying Doctor Service—calling and emergency
4483	Marine— Sydney to Hobart Yacht race, held 26th December.
4636.5	School Of The Air—Broken Hill NSW
5643	Aviation—Sydney to Honolulu
5915	Northern Territory Police—intrastate calling
5410	Royal Flying Doctor Service
5634	Aviation—Perth to Cocos Islands
6556	Aviation—Darwin and South East Asia
6637	Qantas—company frequency
6676	Aviation—Sydney VOLMET transmits on the hour and half hour
7160	Marine—Customs marine frequency
7500 AM	VNJ Time Signal—Lyndhurst Vict. also 4500 kHz and 12000 kHz
7660	New South Wales Police—primary intrastate calling
8867	Aviation—South Pacific
8975	Royal Australian Air Force—South East Asia
10505	New South Wales Police—interstate calling
11247	Royal New Zealand Air Force
11396	Aviation—Darwin and South East Asia
12423	Radio Telephone—outback service
13205	Royal Australian Air Force
13300	Aviation—South East Asia and Northern Pacific
16463.1	Radio Telephone—(this channel is used by an oil rig in Australian waters, talking to mainland U.S.)
17904	Aviation—South Pacific
21970	Qantas—company frequency

22000 kHz to 26000 kHz are used mainly for radio telephone network, the mainstay of communications in the outback of Australia.

These examples of some of the government bodies are in addition to the many licensed commercial operators using HF within Australia.

26.965 MHz to 27.405 MHz is the Australian HF Citizens Band. There are 40 channels in this band and transmissions are AM/SSB.

The Amateur Service (Hams) has use of the frequencies between 52 MHz and 54 MHz.

Between the frequencies 46.25 MHz and 216.25 MHz there are 12 frequencies allocated to the VHF television channels for vision carrier. Likewise, between 51.75 MHz and 221.75 MHz there are 12 channels for sound carrier.

68.00 MHz to 88.00 MHz is the Australian low band, which is used for base to base to mobile operations. In some cases it is a repeater service, however, operations are mainly simplex. Services that might be found on this band include, police, fire, ambulance, forestry, national parks, and many commercial users such as taxis, couriers, transport companies and security companies. This band is used almost exclusively by rural properties and farms where propagation is required over a long distance.

88.00 MHz to 108.00 MHz is the commercial FM band.

108.00 MHz to 136.00 MHz is the AM aircraft band. Here you will find all the comings and goings of international and domestic aircraft, the control towers, flight service and associated services and companies. If you live near a major airport that is serviced by our airline Qantas (San Francisco, Los Angeles, Honolulu or Vancouver) try listening on 131.70 MHz. This is the domestic company frequency of Qantas and it would be interesting to know if it is used internationally.

144.00 MHz to 148.00 MHz is another section of the spectrum allocated to the Amateur Service.

148.00 MHz to 150 MHz is used by government and non-government services for paging, both voice and non-voice pagers. Some users to be found here are hospitals, major shopping complexes and industrial companies.

150.00 MHz to 174.00 MHz is the Australian high band allocation. The services on this band are similar to the low band. Again, mostly simplex but with a few duplex or repeater systems. Included here is the marine VHF 156.00 MHz band. As all the railways in Australia are government owned and operated on a state level and by the federal government, a number of frequencies are shared by the various rail systems around the 168.00 MHz range.

200.00 MHz to 380.00 MHz is the military aviation band. AM mode is used here. The Amateurs also have a slice of this band around 200.00 MHz.

400.00 MHz to 420.00 MHz is used for links between VHF and simplex operations as well as pagers.

420.00 MHz to 450 MHz is yet another Amateur allocation.

450.00 MHz to 520.00 MHz is the Australian UHF band. Some interesting users of this band are police, fire, ambulance, local government, sheriffs' officers, railways as well as commercial operators such as taxis, couriers, oil companies and construction companies. One interesting note is that after Cyclone Tracey devastated Darwin in 1974, it was decided that the eight police forces across Australia should have common communications systems in the event that a natural disaster of this size should occur again. This means that it is possible to go from one capital city to another and remain in radio contact whilst in that city. Therefore, an allocation of 64 channels in the 458/468 MHz range was made for this purpose. Most users of the UHF band have repeater systems.

Between the frequencies 450.00 MHz and 470.00 MHz, the split between the repeater channels, that is the base receive and the base transmit, is 9.5 MHz. Between 470.00 MHz and 500.00 MHz the split is 5.2 MHz and above 500.00 MHz it is 10 MHz.

Our mobile telephone system known as PAMT, or Public Automatic Mobile Telephone, uses 120 channels between 501.00 MHz and 504.00 MHz and 120 channels between 511.00 MHz and 514.00 MHz. It is a duplex system.

Forty channels between 476.425 MHz and 477.40 MHz have been allocated for the UHF Citizens Band.

520.00 MHz to 800.00 MHz are used for both sound and vision carriers of the UHF television channels.

700.00 MHz to 1 GHz: These frequencies are used for the control of bases, the changing of channels by remote control or the shutting down of bases.

Above 1 GHz or the microwave band, frequencies are used as point to point bearers for the telephone network as well as radio users.

The responsibility for the control of the radio spectrum in Australia rests with the Federal Department of Communications.

The hobby of monitoring is a relatively young one, but healthy and growing daily in the land down under. PC

Scanning The "Whatzit Band"

Bet You Never Thought Of Monitoring Here – But Wait!

BY HARRY CAUL, KIL9XL

Nestled far from the busy rush of the VHF high, low, and aero bands, and the UHF band, is the lonliest and most obscure and bizarre little communications band ever to be found this side of microwave. It's only 4 MHz wide and you've probably never heard of it, or monitored there, being far into the middle of nowhere, and (until now) totally ignored in all publications and frequency guides.

This is the 72 to 76 MHz band, a tiny slice of space mysteriously placed between TV Channel 4 (66 to 72 MHz) and TV Channel 5 (76 to 82 MHz). Until recently, when all-frequency scanners (such as the Realistic PRO-2004, ACE AR-2002, JIL SX-200, ICOM R-7000, Yaesu FRG-9600, Regency MX-5000, Regency MX-7000, etc.) were designed, there wasn't any easy way of monitoring there.

This little "whatzit band" steadfastly clings to its anonymity with nary a complaint—even from monitoring enthusiasts. Well, let's not claim that it's the most exciting band in the world, but, it's mostly unexplored by the scanner crowd, and that makes it worthy of consideration.

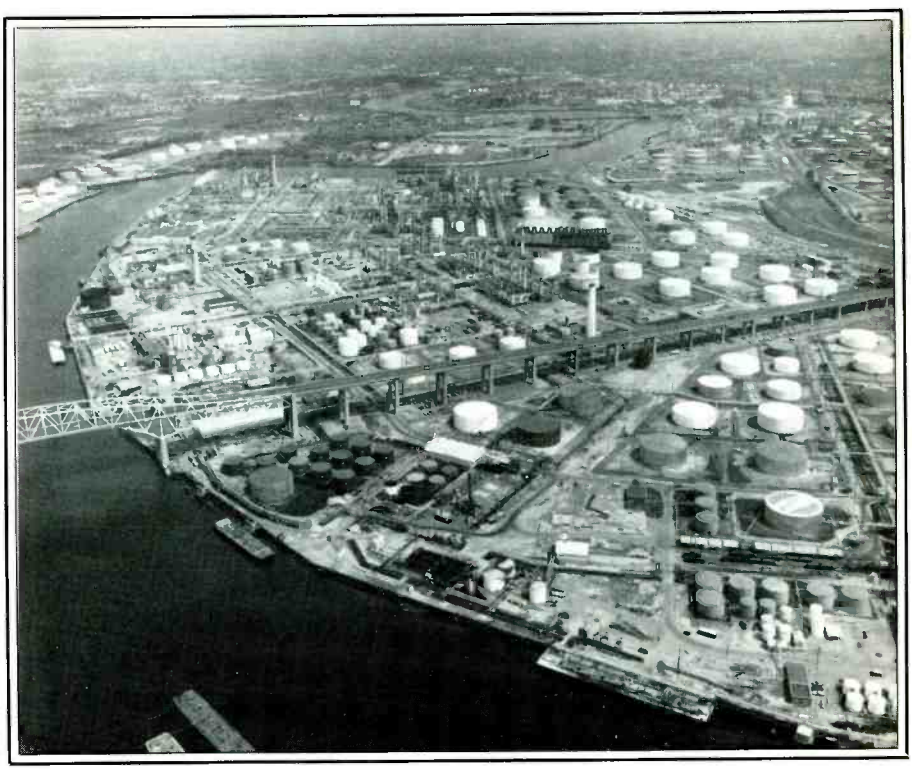
Fact is, the band is available for use with communications relating to police, fire, business, industrial, aeronautical, one-way radio paging, railroad, and other activities. Because of FCC fears that operations here might cause interference to TV reception (Channel 4 audio is on 71.75 MHz, Channel 5 video in on 77.25 MHz), there are a number of restrictions imposed upon many who would become licensees on these frequencies. These restrictions usually require vertical antennas and low power transmitters. This makes the band ideal for use by highway callboxes and other non-voice operational, control, telemetering, or fixed (point-to-point) data operations, and of limited appeal for general two-way voice communications. In most instances, the FCC would prefer that licensees use other bands, even to the point of the FCC asking many would-be licensees to explain why they need to operate in the 72 to 76 MHz band.

Another quirky thing about this band is that, right in its middle, there are two gaps. The sub-band 73.00 to 74.60 MHz is set aside for use by radio astronomers who tune the cosmos there. Then, between 74.60 and 75.40 MHz, there is a band reserved exclusively for aeronautical marker beacons (nominally on 75.00 MHz). So, there's a "hole" running from 73.00 to 75.40 MHz.

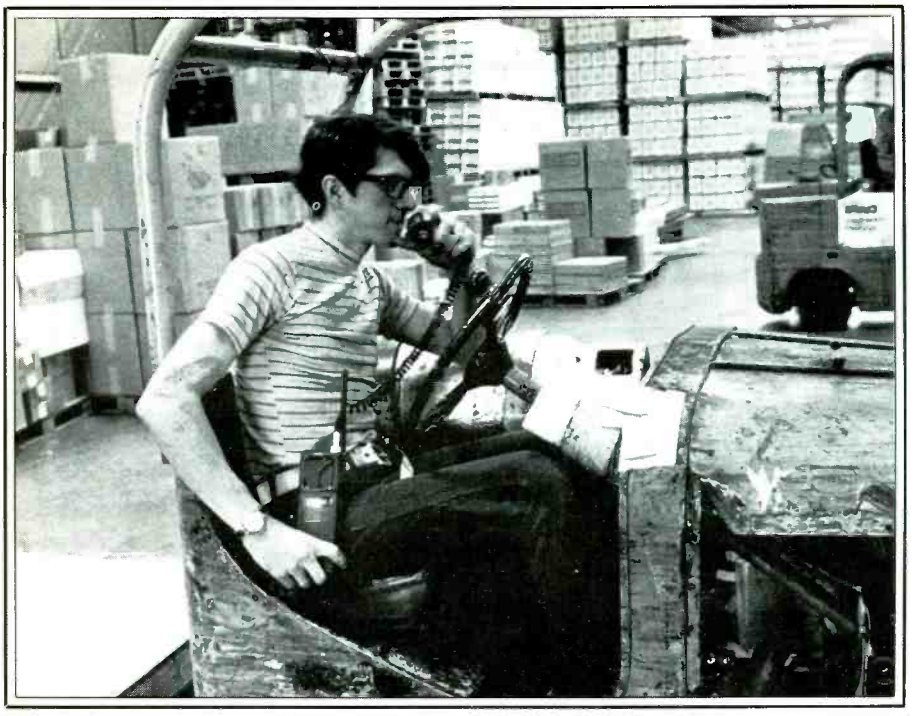
That means, any activity in the 72 to 76 MHz band will be taking place from 72.00 to 73.00 MHz, and from 75.40 to 76.00 MHz. This leaves about seventy five assignable frequencies you can try to monitor. Putting your scanner into search/scan mode in these ranges should produce for you any signals within range of your station. If your scanner has selectable modes and channel spacing steps, set the mode for FM, and the channel spacing for 20 kHz (5 kHz to 10 kHz will work too, but take longer to sort through the band.)

Mostly you'll hear an amazing array of non-voice signals producing a very animated assortment of tones. You may also find that there are a number of voice mode radio paging operations on the same channels as the signal tones. Possibly you'll hear some two-way communications, too.

Frequencies in this band are set aside for radio paging (voice and tones).



Large, open industrial areas may have activity in this band.



In-plant two-way activities are often coordinated on 72 to 76 MHz channels.

All of these stations have callsigns and these are regularly sent in CW mode via machine. Near major population areas, especially, you should be able to hear activity of one sort or another on many of the frequencies available for assignment. These frequencies are shown in Table I.

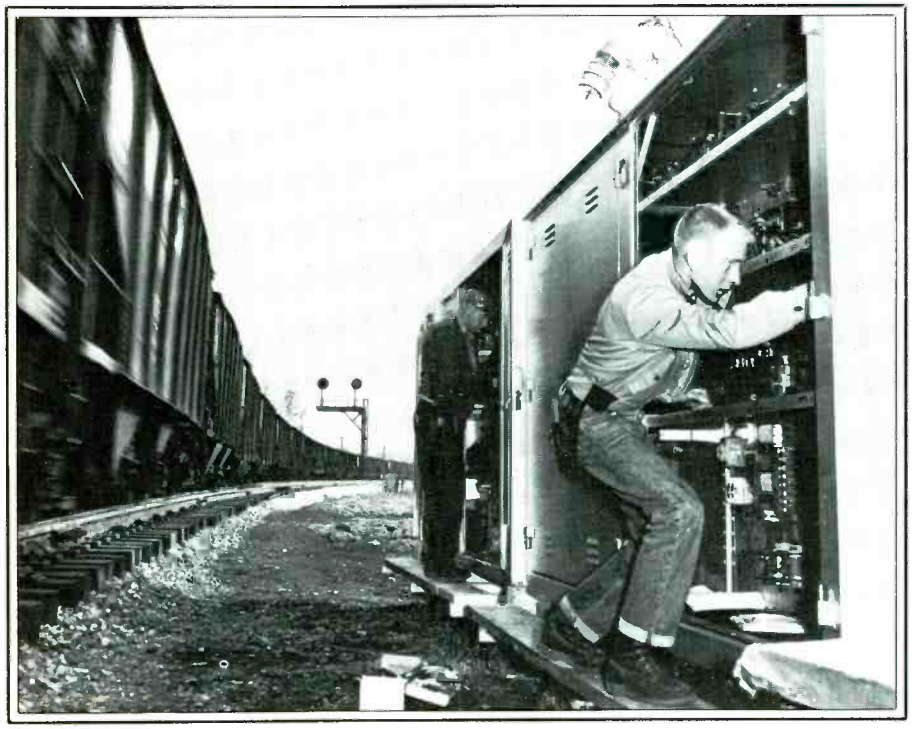
72 to 76 MHz Band Activities

Domestic Public Land Mobile (paging), both voice and non-voice, can operate on all of the frequencies shown.

Aeronautical operational fixed stations can be licensed on all of the frequencies shown *except:* 72.32, 72.34, 72.48, 72.52, 72.56, 72.60, 75.44, 75.48, and 75.52 MHz. In any given geographic area, as many as four frequencies may be allocated for aeronautical use.

Highway Callboxes can operate on all channels shown in Table I. These are all 1-watt transmitters using whip antennas not extending more than twenty feet above the ground. Control stations for a network of callboxes can operate with 25 watts (ERP) and may use antennas fifty feet above the ground. These systems can incorporate voice, and non-voice modes, and the central control station is required to announce its callsign by voice.

Police, Fire, Highway Maintenance, Forestry Conservation, and Special Emergency operational fixed stations may be authorized on all frequencies shown in Table I.



In addition to frequencies in the Railroad Radio Service, activities in and around railyards sometimes reveal 72 to 76 MHz band communications. (Photo courtesy Norfolk and Western Railway.)

The Vak-Tenna is a new scanner antenna that can be precision tuned to any band, including 72 MHz.

Power Radio Service, Petroleum, Forestry Conservation, and Special Emergency operational fixed stations may be authorized on all frequencies shown in Table I.

Power Radio Service, Petroleum, Forest Products, Motion Picture, Relay Press, Business, and Motor Carrier radio service operational fixed stations may be authorized on all frequencies in Table I.

Special Industrial and Railroad Radio units operate here, too. All frequencies in Table I may be used for operational fixed use. In addition, frequencies shown in Table II may be used for 1-watt two-way communications within certain limited boundaries, such as plants, factories, shipyards, mills, mines, farms, ranches, construction areas, or (in the case of Railroad Radio Service units) in railroad terminals or rail yards.

Radio Control (hobby) transmitters operate on 72.08, 72.16, 72.24, 72.32, and 72.40 MHz.

Manufacturers Radio Service operational fixed stations can operate on frequencies in Table I. In addition, 1-watt two-way communications may be licensed on the frequencies shown in Table III on the condition that they are used within the confines of a plant, factory, shipyard, mill, or other factory area.

These are the primary users of communications in the 72 to 76 MHz band. You can see that while voice and non-voice activities are usually mixed together, there are some frequencies where (if you hear anthing at all) it will probably voice only. You'd need to be reasonably close to an industrial or railroad site to hear anything from the low-power units.

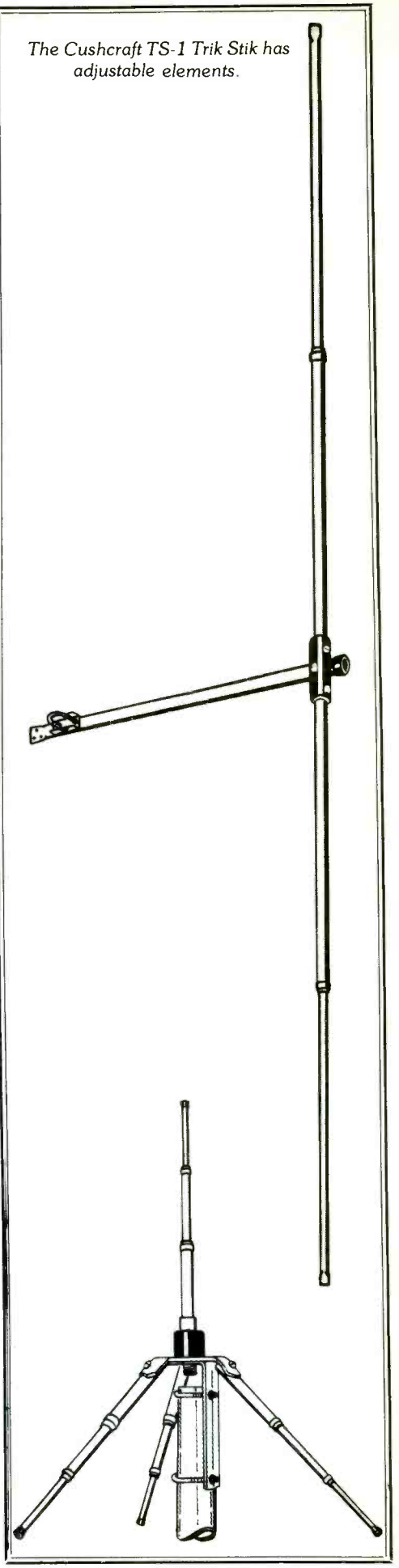
Listening

Located where it is in the spectrum, you may wish to consider the best type of antenna for maximum reception here. It's 24 MHz higher than the 6 meter ham band, almost twice that distance below the VHF aeronautical band. For general receiving purposes, I've had reasonably good results with a regular VHF high band (150 to 174 MHz) antenna, and somewhat better results with 30 to 50 MHz scanner and 50 MHz ham (6 meter band) antennas.

If you're really interested in going at the band with a vengeance, one way of going about it would be with an antenna cut for this 4 meter band. A quarter wave antenna (whip or ground plane) would need to be cut to 40 inches. You could easily cut down most steel or aluminum element ground planes or whips originally designed for a lower frequency band, such as CB, low band VHF, or 6-meter ham. Use the 40-inch measurement as your guide.

Yet another approach would be using an antenna that has telescoping elements that

The Cushcraft DGP ground plane antenna, for instance, can be adjusted to a length for maximum reception in this band.



The Cushcraft TS-1 Trik Stik has adjustable elements.

Table I

72.02 MHz	72.58 MHz	75.54 MHz
72.04	72.62	75.58
72.06	72.64	75.62
72.08	72.66	75.64
72.10	72.68	75.66
72.12	72.70	75.68
72.14	72.72	75.70
72.18	72.74	75.72
72.20	72.76	75.74
72.22	72.78	75.76
72.24	72.80	75.78
72.26	72.82	75.80
72.28	72.84	75.82
72.30	72.86	75.84
72.32	72.88	75.86
72.34	72.90	75.88
72.36	72.92	75.90
72.38	72.94	75.92
72.40	72.96	75.94
72.42	72.98	75.96
72.46	75.42	75.98
72.50	75.46	
72.54	75.50	

Table I: The major frequency grouping in the 72 to 76 MHz band is available for radio paging, callboxes, aeronautical fixed, control circuits and many other types of communications activities.

Table II

72.44 MHz	72.60 MHz	75.52 MHz
72.48	72.68	75.56
72.52	75.44	75.60
72.56	75.48	

Table II: One watt two-way communications in plants, factories, shipyards, mills, mines, farms, ranches, construction areas, railroad terminals, and railyards may be used on these frequencies.

Table III

72.02 MHz	72.22 MHz	72.44 MHz
72.04	72.24	72.48
72.06	72.26	72.52
72.08	72.28	72.56
72.10	72.30	72.60
72.12	72.32	75.44
72.14	72.34	74.48
72.16	72.36	75.52
72.18	72.38	75.56
72.20	72.40	75.60

Table III: Certain manufacturing areas can use these frequencies with one-watt equipment.

could be adjusted to 40-inches each. The Cushcraft TS-1 *Trik Stik* (made by Cushcraft, P.O. Box 4680, Manchester, NH 03108) has elements that can be adjusted in length. A new portable scanner antenna with adjustable elements is the *Vak-Tenna* (made by Electron Processing Inc., P.O. Box 708, Medford, NY 11763). While the overall tuning range of the *Vak-Tenna* is 30 to 500 MHz, it can be peaked to any frequency within its design parameters. This antenna attaches to a wall or window by suction cups and may be used indoors or outside.

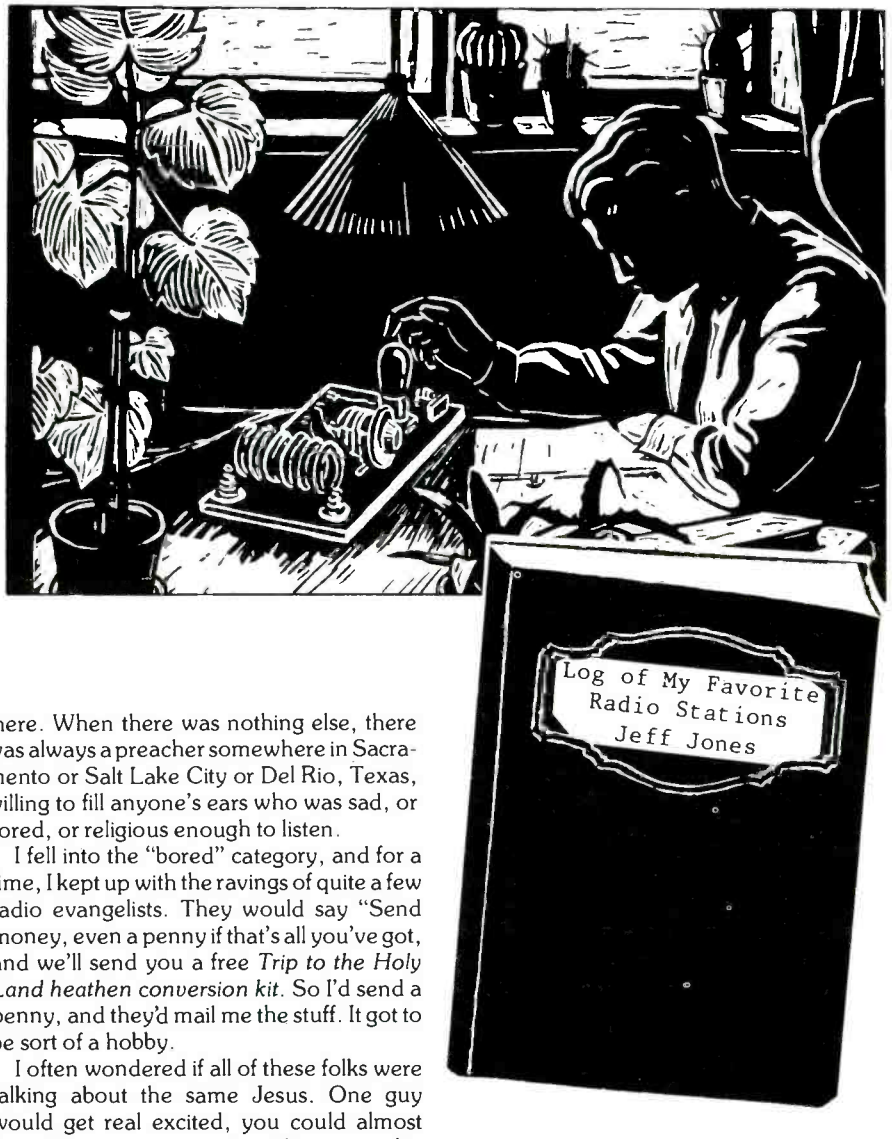
So there it is. Perhaps not the most exciting communications band in the electromagnetic spectrum, but nonetheless one that offers interesting and unique challenges for owners of extended frequency coverage scanners. What's more, it gives the true adventurer a chance to explore a band that heretofore has never been given any exposure to scanner monitors. That makes it worthy of our interest, and yours too.

Readers who receive voice or other identifiable transmissions in the 72 to 76 MHz band are welcome to drop us a card or letter here at *POP'COMM*. Please list the frequency, geographic location of station, callsign and licensee (if known), type of communications monitored. If we get a sufficient response, we'll run a monitoring log of stations heard by our readers. And don't forget, sometimes these frequencies open for skip reception. **PC**

Be Your Own Radio

Maybe a Receiver is More Than Just a Box Full of Components, After All.

BY JEFF JONES



When I was a lad, I used to listen to the radio late at night, the electric glow taking me from Omaha to Oklahoma as I carefully tuned in each station.

The siblings sleeping in the same room never complained, the quiet static was like the washing of ocean waves on a beach, and they all drifted off to sleep. It was my nightly adventure, the green glow at arm's reach, hopping across the continent like some electronic supertraveler.

In the dark, it seemed eerie at times. Listening to a voice in Boise, Idaho, sometimes I would find myself floating in the vast darkness in between the earth, the earth curving away beneath, and spots of twinkling lights like electric jewelry scattered across the immense land.

Or, hearing a little station in Window Rock, move in closer to the earth, and see rows of beat houses in the desert, the love of families glowing from warm windows into the miles of night.

Or hear the traffic reports from Los Angeles, and have visions of grey rivers from hell; dirty grey pavement, grey sky, grey faces staring slowly past the latest fatality.

All I had was an AM radio. Nothing fancy. I could only get local stuff during the day. My traveling had to be done at night.

Somehow, those distant voices in the night connected me with the huge and incomprehensible "world out there," the endless mass of land and humanity, irresistable and terrifying.

I kept a log of stations and their location, and got to know where each was and what time the good shows came on. Old radio shows, mystery theatres, shows where lonely folks called and cried their most intimate secrets to some stranger in an isolated soundproof studio . . . .

There was always one sport or another in season, excited announcers hollering for the home team, strange names and vague stadium visions, crowds like a seashell at full volume, and all the 'ol boys drinkin' beer and cheerin' by the radio back home.

And no matter how early, or late at night, always the preachers. Superpowered voices crying for salvation across the Mexican desert from the 100,000 watt stations there. When there was nothing else, there was always a preacher somewhere in Sacramento or Salt Lake City or Del Rio, Texas, willing to fill anyone's ears who was sad, or bored, or religious enough to listen.

I fell into the "bored" category, and for a time, I kept up with the ravings of quite a few radio evangelists. They would say "Send money, even a penny if that's all you've got, and we'll send you a free *Trip to the Holy Land heathen conversion kit*. So I'd send a penny, and they'd mail me the stuff. It got to be sort of a hobby.

I often wondered if all of these folks were talking about the same Jesus. One guy would get real excited, you could almost hear him sweating and writhing in righteousness, and tell the enthralled throngs that Cadillacs and gold rings would be theirs, if they would only trust Jesus.

Another guy would talk real soft and low and sympathetic, in a deep southern accent, and tell the sad suffering masses that they would never need another penny again, if they would only trust Jesus. Usually this guy said *Jesus* as if it rhymed with *cheese sauce*.

After awhile, I realized that there is a whole network of lunatics out there of every race, creed and color, each equally convinced that he is the only one spouting the truth, equally certain that he is working for the betterment of mankind. Hopefully, each is right.

I used to envision the many voices spreading across the world, like vast benevolent webs, filaments of waves and wires crisscrossing the planet in search of knowledge, deliverance from boredom or lonliness, perhaps even love. The preachers, newsmen and sportscasters' voices spun

across the miles, into warm well lit homes full of love, into cold dark rooms full of nothing but sadness. Lone voices blanketing the wilderness.

The old radio was a gift from Grandpa, once belonging to Uncle Joe, whom I never knew. I used to wonder if Uncle Joe's ghost was out there among all those radio waves in the dark. If I tuned to just the right frequency, would I hear his voice? And if I did hear it, would I know it was him?

My journeys ended after a year or two; I went on to something else. Now a radio is just a radio. Nothing magic. An inexpensive way to spend an evening, flipping across the dial to see what's shaking in the rest of the west. Most of it seems the same, people have the same concerns everywhere, folks are still out there searching.

But I can't seem to shake the thought of a huge fabric covering the world, made up of invisible threads that connect us all.

Stand out on a dark field on a moonless night, and stare up at the stars. Think about the people that you love, scattered across the town or the state or the country or the world.

What is it that keeps you together over all the miles, all the years? What is that pulling in your gut when you think of a distant son or a lost love? What delicate threads are these, that circle the earth unbroken? **PC**

Editor's note: Jeff Jones writes a column for the Payson Roundup Review in Payson, AZ.

EMERGENCY
COMMUNICATIONS FOR SURVIVAL

BY GORDON WEST, WB6NOA

"Automatic Long Wire Tuners"

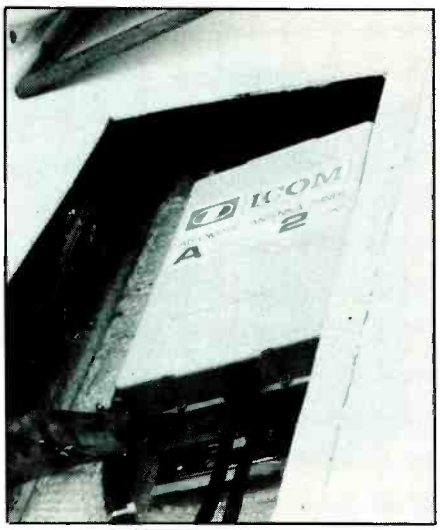
Emergency communicators may sometimes need to transmit on worldwide frequencies with a "hay wire" antenna system. Most automatic tuners won't work in this configuration. The majority of automatic tuners will only work with resonant antennas that simply need to be fine-tuned. Most automatic tuners won't tune up a long wire antenna system.

It takes a different type of circuit to tune up a random length of long wire. Unlike a normal 50-ohm antenna system, most long wires look more like 2 to 5 ohms reactive. You can always spot a long wire automatic antenna tuner because it has a single porcelain-insulated terminal screw where a single wire is connected. This automatic tuner is also controlled, remotely. The tuner must be placed as far away from the ham equipment as possible and directly at the feedpoint of the long wire antenna system. It also must be copper foil grounded at this same feedpoint, too.

The automatic long wire antenna tuner would allow you to immediately feed 100 watts into a long wire antenna system under the following emergency conditions:

- Wire over a tree limb with a wet-earth ground
- Insulated stay aboard a boat with sea water ground
- Wire strung between two buildings using exposed metal pipes as ground
- Airplane long wire using fuselage as ground
- Extra long whip antenna using car body as ground

Generally, the longer the wire, the better the results. While long wire automatic antenna



tuners *will* tune up a 9-foot CB whip, their signal is dramatically less than that same whip with an extra 20 feet of wire attached to it, thrown over a nearby tree.

The long wire automatic antenna tuner will compensate for a long wire that is swinging. If the length of the wire or the surrounding capacitance to the wire should change, the tuner will automatically seek a new L/C setting within.

The feedpoint impedance of most of these long wire systems is about 2 ohms reactive. This is why your normal 50-ohm impedance automatic tuner simply won't work. They are not designed for long wires.

The long wire antenna tuner must be placed as far away from the equipment as possible to prevent RF feedback. Today's solid state radios distort badly with an antenna closer than 10 feet away. The wire must be longer than 10 feet, and most tuners will resonate anything up to about 150 feet.

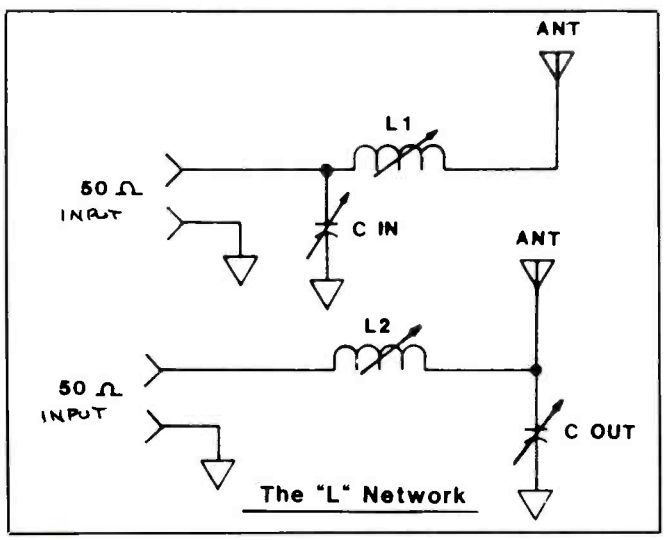
The long wire automatic antenna tuner will only work if a large ground plane is connected directly to its base. If the ground plane is several feet away, copper foil must be run between the tuner ground and the ground counterpoise. Any size of *wire* connected between the tuner and the ground counterpoise won't work—the wire acts as a high reactance and cancels the ground effect. Copper foil or braid is essential.

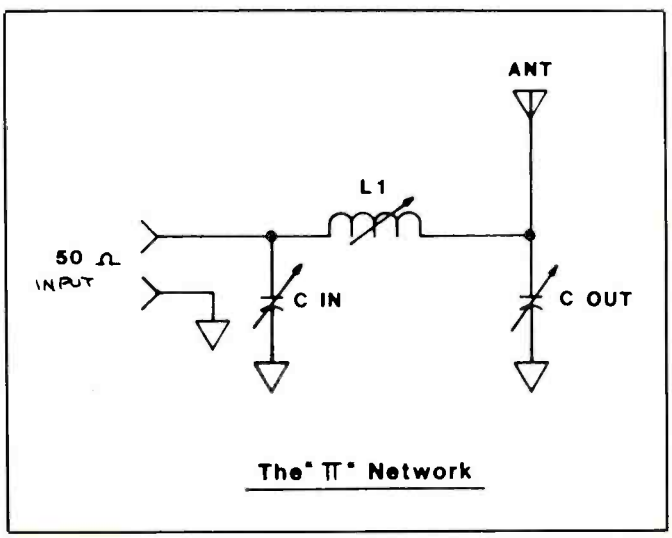
Within the body of the tuner are a dozen tiny reed relays that drop in the right amount of inductance and capacitance to tune up a long wire. A microprocessor brain commands these relays to determine load impedance, SWR, and the best match for the best possible amount of RF radiation down the wire.

Here is a review of the best fully automatic random wire antenna tuners:

Stephens Engineering Model 1612 (703 - 220th S.W., Mount Lake Terrace, WA 98043). This marine-grade $1,000 tuner requires only a small amount of 12 volts and a coax feed from your transceiver to operate between 2 to 30 MHz. No control line is required. It tunes up instantly on 10 watts or more of RF. It will match anything from a wet piece of spaghetti to a barbed wire fence with a suitable ground plane.

SGC Model SG-230 (PO Box 3526, Bellevue,WA 98009). Th is $700 tuner is similar to Stephens. It requires *no* additional tune-up data line from the set. It tunes up





with approximately 30 watts of RF power on any frequency between 2 MHz to 24 MHz.

ICOM Model AH-2 and AT-120 (ICOM America, 2380—116th Avenue N.E., Bellevue, WA 98004). The AH-2 is designed for all ICOM high frequency transceivers. A small accessory box attaches to the side of the transceiver and controls the tune-up procedure using an additional 4-conductor data line. Although the AH-2 is advertised as the ideal mobile auto tuner for a supplied 8-foot whip, the whip only performs well if additional random wire is added to its tip. The Model AT-120 is designed for the ICOM M-700 marine transceiver, and similar to the AH-2, this tuner also requires the additional 4-conductor data line and only works with the ICOM line of equipment.

Yaesu Model FC-1000. The price is unknown on this brand new long wire tuner that Yaesu may soon bring into our country. It works only with Yaesu transceivers and also uses a small control box that fits below the Yaesu HF set. A data line between the tuner and the HF Yaesu controls tune-up. It looks similar to the ICOM, and probably performs with a good long wire just as nice as the ICOM tuner.

Kenwood shows no long wire automatic antenna tuner in their line as of yet. However, if they announce a marine SSB transceiver, chances are they may soon announce an automatic antenna tuner designed specifically for long wire installations.

The Stephens and SGC units will work with *any* ham HF transceiver without the need of a separate data line. The ICOM units work with ICOM sets, and Yaesu only with Yaesu. All of these tuners are designed specifically for remote mounting and a single wire radiator.

The long wire automatic antenna tuners are designed specifically for remote mounting and are specifically suited for emergency communications. These are not the automatic-type tuners that you would use with a beam of a dipole—those tuners are the ones you see in all the ads that are designed for desktop mounting right beside the basic ham setup.

All the tuners just described use active antenna matching systems. This minimizes non-productive resistive losses associated with an antenna tuning system that utilizes no relays or external voltage feeds. The maxcom resistive tuner has its place in specific strong-signal area applications—but the active automatic long wire tuners I have just described offer less than 1 dB loss for their tune-up operation. All they need is signal, about 1 amp of 12 volts, and for some tuners, a small 4-conductor cable that tells them when to tune.

Write these manufacturers for their descriptive literature on these products. When you don't have the time to put up a dipole, tuned vertical, or a 3-element beam, a piece of wire thrown over a nearby tree and hooked to one of these end-fed automatic antenna tuners—with a good ground—will give you a powerful signal to keep you on the air.

BROADCAST TOPIX

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

BY MARK MANUCY, W3GMG

It was about a year and a half ago when I mentioned that the National Association of Broadcasters was planning to build a couple of experimental antenna systems near Washington D.C. (1600 to 1700 kHz). They are still planning to build them, but, the real estate problems have yet to be resolved. These experimental antennas are to find a way to produce less of a sky wave than the common monopole used by most non-directional broadcasters today. In the thinking of the broadcaster, less sky wave, means less interference, and more local coverage. Certainly the broadcasters on the local channels (1230, 1240, 1340, 1400, 1450 and 1490) would welcome such an antenna as a required add-on, since it would give each local broadcaster more coverage at night, which he sorely lacks now.

Many of the local channel operators have less than optimum antenna systems to work with. One of the stations I work for has an antenna on the roof of a four story building in Baltimore. To be a quarter-wave length on 1230 kHz, the tower and associated ground radials would have to be just over 200 feet long. WITH's tower is 150 feet, and the ground system is on the roof of the building, which is only 160 by 200 feet. Physically, the longest radial can only be half the length it should be for 1230 kHz. The shortest ones are about 75 feet instead of the 220-240 feet they should be. Interestingly enough, on a recent field measurement of the WITH signal, the field intensity of the station, according to the consulting engineers who put my measurements into the computer, was radiating the signal of a full quarter-wave antenna for the first three miles from the tower, tapering off to what would be expected for a short tower beyond that. The base of the tower is fifty feet above the ground. The 150 foot tower, plus the fifty foot elevation of the base, is a quarter-wave, within a few feet!

There are only a few, maybe a dozen, roof-top antenna systems still existing in the U.S. WITH was built in 1941, and has the transmitter shack sitting right next to the tower on the roof. Other than the tower and the building fixtures, there is not a whole lot left to indicate that it was built in the 1940's. The station's current on-air transmitter is a solid-state Harris unit installed in 1977. By the time you read this, the station should have all new audio processing gear, and be broadcasting AM stereo. The telephone lines are being replaced with STL gear operating in the 950 MHz band.

Of those which are left, most of the roof-top antennas that probably will remain are located in city locations such as WITH. It's not that they want to keep such an inefficient antenna, but the stations have become "treed in" by stations all around them. The interference that would be created by moving the tower even a few miles in any direction would make the FCC frown upon such a change. The funny thing about WITH, is the downtown studio has become "treed in" as well. Although the studio is in an eleven story building, all of the buildings built in recent years, during the renovation of downtown Baltimore, have all been more than eleven stories. A twenty-three story building to be completed in 1988, is going up across the street between the studio and the transmitter line-of-sight. Almost all programming is currently sent to stations by satellite, forcing WITH to move their studios into a building with a view to the horizon in order to receive network programming and eliminate the costly telephone lines to the transmitter.

How much do telephone lines cost today in a major city? WITH will be able to pay for the conversion to AM stereo in less than two years using the monies previously paid to the telephone company. Would you believe the STL equipment alone—for stereo—would be paid for within a year's worth of money to the telephone lines charge! How about a new twelve channel stereo consol, production room gear, new processing gear, stereo gear, STL gear, return TSL gear and miscellaneous items for less than years of telephone line charges! That's how expensive an operation in the city can be. Other stations have similar situations. It's part of the operating costs.

Speaking of STL's, which are Studio-Transmitter Links and operated for the most part in the 950 MHz band, they have been undergoing some interesting changes over the last few years. Most of the units have about a 70 db signal/noise ratio when used as audio links which is better than the station can generally get with a telephone line. There have been some newer STL's on the market which operate in the 23 GHz band and using digital processing have achieved a signal/noise ratio of about 110 db. With the improvement of FM transmitters, now and in the next few years, the broadcast community will be able to keep up with the home electronics market. This is especially important with the new audio electronics available for the automobile. If the broadcaster is to head off the use of CD's in cars, he can do so by providing quality which is equivalent to the CD player. Many stations have already gone to an "all CD" music library and many more are playing better than 50% CD's.

Case number "xx" for AM loop antennas. A radio station was using a Kenwood tuner for an off-air monitor. The station was in a building where they could barely hear their transmitter and then there was all kinds of static and noise from nearby machinery. They had purchased a commercial RF amplifier ($500.00) to boost the signal for reception of their signal by the Kenood plus the EBS receiver. However, when they would go off the air, there was so much static and noise still being picked up they could not tell if it was the transmitter that had gone

Call Letter Changes

Location	Old	New	Location	Old	New
AM Stations			Brawley, CA	KMMG	KWST
Spanish Fort, AL	New	WAFK	Corning, CA	KVCC	KEZD
South Tucson, AZ	KHYT	KMRR	San Diego, CA	KSDO-FM	KSWV
Monterey, CA	KIDD	KXDC	Kremmling, CO	KSKE	KTLD-FM
Maniton Springs, CO	KIKX	KRYN	Palm City, FL	New	WCNO
Woodville, FL	New	WTWF	Chiefland, FL	New	WTBH
Evanston, IL	WEAW	WSSY	Panama City, FL	WLVV	WILN
Brazil, IN	WSDM	WBZL	Williston, FL	WLLO	WFEZ
Leavenworth, KS	KCLO	KCWV	Athens, GA	WPBS	WMSL
Gretna, LA	New	KAIG	Forsyth, GA	WIBB-FM	WFXM-FM
Orange, MA	WCAT	WPNS	Granite City, IL	KWK-FM	KWK
Cherry Valley, MA	New	WCRN	Rantoul, IL	New	WLTM
Tupelo, MS	WWPR	WELO	Kentland, IN	New	WPNI
Gladstone, MO	New	KGGN	Danville, IN	WATI	WGRT-FM
Reno, NV	KOLO	KQLO	Fairfield, IA	New	KCKJ
Nashua, NH	New	WMVU	Goodland, KS	New	KGCC
Laconia, NH	WMRS	WLNH	Leavenworth, KS	KZZC	KCWV-FM
Webster, NY	New	WMJO	Springfield, MA	WHFM	WHYN-FM
Brownville, NY	New	WXIK	Kingsford, MI	New	WEUL
Albany, NY	WWCN	WOKO	Pipestone, MN	KLOH-FM	KISD
Garner, NC	WKBQ	WHEV	Houston, MO	KSCM-FM	KISD
Roseburg, OR	KRSB	KTBR	Billings, MT	New	KFBA
Atlantic Beach, SC	New	WMIW	Red Lodge, MT	New	KBSV
Farragut, TN	New	WBAV	Kearney, NE	New	KEAA
Lubbock, TX	KRLB	KJBX	Ocean City, NJ	WDVR	WKTU
Palestine, TX	KYYK	KNET	Dulce, NM	New	KJAT
Weslaco, TX	KRGV	KRGE	Ithaca, NY	WHCU-FM	WXYL
Salina, TX	KICT	KFRM	Muskogee, OK	KRLQ	KKWK
Provo, UT	KXYC	KSRR	ADA, OK	KASX	KFIX
Lynchburg, VA	New	WVZN	Due West, SC	New	WECE
Ashland, VA	WTVE	WMMM	Charleston, SC	WXTC	WXTC-FM
Highland Springs, VA	WENZ	WRGF	Amarillo, TX	New	KCAV
Spokane, WA	KZZU	KHIT	Odessa, TX	New	KEHC
			Marlin, TX	KLMT	KRXX
FM Stations			Palestine, TX	KNET	KYYK
Anchorage, AK	KDEJ	KEAG	San Antonio, TX	KLLS-FM	KCYY
Phoenix, AZ	New	KNAI	Denton, TX	KTKS	KOAI
Oracle, AZ	KHYT-FM	KHYT	Blanding, UT	New	KSMH
Camden, AR	KCEZ	KCXY	Goldendale, WA	New	KIVS
Colusa, CA	New	KWBF	Clifton Park, WV	WCSF	WVKZ
Mt. Bullion, CA	New	KAJB	New Holstein, WI	New	KFKQ
Santa Cruz, CA	New	KWIS	Sturgeon Bay, WI	New	WDCW
Carmel, CA	KWST	KXDC-FM	Laramie, WY	New	KLWG
Glendale, CA	KUTE	KMPC-FM	Lost Cabin, WY	New	KRLU

off, or they were having trouble with the Kenwood. The solution was to move the Kenwood away from the RF amplifier and into another room where the tuning would not be adjusted three dozen times a day and hook the external antenna connection to my four foot loop which was located in the next room near a window. We used about twenty five feet of RG-58 to connect the loop to the Kenwood. The signal meter now reads above four on a scale of five, the signal is clean and I don't get phone calls at 3 AM saying, "We're off the air, . . . I think," when they are not! Believe me, that was a tough fix! Many different things had been tried previously, including a roof-top antenna, none of which had worked satisfactorily. This was a case of needing a lot of signal, rather than dx'ing for a small signal, but it still points up the strength of the loop to get the signal in and reject noise. This was a loop built from coax, so it was shielded, and probably worked when a ferrite or unshielded loop would not have worked as well.

The ferrite loop has a small capture area and uses a preamp to amplify or build-up the signal, whereas the four foot loop does not use a preamp and delivers the signal because of the large area the loop occupies physically. the directionality also helps make it possible to null out the noise. If you want more information on these loops I have a plans package for box loops for $5.50 and one for ferrite loops for $7.50. Both are post-paid and available from the address at the end of the column. Allow six to eight weeks for delivery.

Stereo

The FCC has not, as of November, said anymore about the single AM stereo system. I guess the Motorola camp is waiting with bated breath to hear! Meanwhile, Mr. Kahn has said little, except to tout two new stereo stations, one in Boston and the other on the west coast. While gaining two new stations he lost three others to C-Quam.

I mentioned late in 1986, that Sanyo would have a chip out by the end of 1986 that would decode both stereo systems. By the end of 1987, the chip is still not readily available to the average consumer. Yet Motorola has just announced (Nov. 87) that they have another new chip which will bring to an end the lack of boom boxes without AM stereo. Have you been wondering why boom boxes haven't had AM stereo? The current line of chips available draw too much power from batteries. That's not much of a problem in a car, but as loud as

most boom boxes are played, the batteries probably don't last very long as it is. So this new chip, MC-13024, which has taken several years to design, is an entire AM radio except the audio amplifier! It only draws about 5 ma of current, so it should make the AM stereo versions of the "walkman" type of radio a bit hit in 1988. This is the shot in the arm AM radio has needed. I only wish we could have had this type of chip about five years ago!

Extra Darkness

Again this year we have been granted through the courtesy of our government, an extra hour of darkness for the month of April. Daylight Saving Time takes effect the first of April, instead of the end of the month, as has been the custom in years past. Many stations will be operating with low power during this time which allows us to search out a bunch of new stations early in the morning. While driving through Virginia during the early AM, I tried an idea I once used before. It worked, but I didn't try it soon enough. Having worked for WBAL for a number of years, I am intimately familiar with their directional pattern at night, and central Virginia is not a strong signal area for them in the early morning hours. Reasoning that this might present an opportunity to hear another station on 1090 kHz, while driving on the back side of their pattern, I tuned the radio to 1090 and sure enough they (Larry King) were in the mud and two other stations were obvious! The skip was right, but as I sped along in the night and got closer and closer to Maryland, I could not hear anything to help me ID who the strangers were, and WBAL kept getting stronger every mile. Maybe next time.

Another FM trick I've tried before met success again. While driving between Frederick and Hagerstown, I knew the Hagerstown station WWMD (104.7) had a dead spot behind Mt. Washington State Park, on the Frederick side of the mountain. While driving from Baltimore, I noticed the FM band was under a bit of an inversion, as signals that were normally free from interference, were not. Also, there is a new station due to come on 103.1 right where I would be driving, so that bore checking out. Starting up the mountain, I heard a 103.1 from the other side of the Chesapeake Bay, so I though I'd try 104.7 and lo and behold, there was the Salisbury station some 150 miles away and I'm only fifteen miles from Hagerstown! These mountains are really neat for tricks like this. No beam could be built to have a front to back ratio like this! Now if we could only figure a way to put a rotating mountain in the backyard! Those of you who don't live in or near mountains, might consider a mountain vacation if you are an FM DX'er. It's an easy way to log two or more stations on Most FM channels. All one has to do is drive around the mountain. Stay off the top, since all the signals would be heard at the same time. The DX'er has to be the rotator, and rotate himself, around the mountain. Be sure to pick a mountain that does not have a stack of antennas on it. That would be the perfect way to ruin a DX'ing vacation. See the photos sent by Ron Parks of Sandia Crest near Albuquerque, N.M., some 10,687 feet high. Don't go near there!

It has been a while since I've DX'ed in the mountains for more than a drive through. With a family it is difficult to isolate yourself for the length of time required to do serious DX'ing. Others just don't understand! I know guys that take off from the family for a week to go duck or deer hunting, but we're looked upon as weird because we want to go DX hunting. I mean we don't even get the smallest amount of respect! There is no open season on killing towers, or stealing copper, or even shooting flashing beacons. Where have we gone wrong? Are we too nice? Everyone knows that Mr. Niceguy always finishes last. Birdwatchers go chasing through the woods looking for an elusive feathered species and folks think they are ok, maybe a bit funny, but ok. Hams and SWL's are given their distance as well. Where's our respect, Rodney? I don't mean to lump Ham's and SWL's together, anymore than an SWL and BCL are the same. But depending on the company they keep, people who do not understand electronics, or radio, think of them in the same category, not knowing the difference.

I don't know exactly what it is that sets the BCL apart? Maybe, it's because everyone listens to the radio, but few listen to shortwave. That sets the SWL apart from the regular radio listener. The BCL is not the radio groupie, that goes nuts over the DJ, and forms a fan club for one person. Maybe it's the same mystique of the broadcast engineer, since many of them are BCL's. The dedicated BE is certainly a rare breed indeed, actually in danger of extinction! I do see new blood coming in the ranks of BCL'ing so they are not dying yet. The BE listens to the radio with the same dedication as the BCL but he has an excuse; he will be "fine tuning" the sound of the station, comparing with others, perfecting his station(s)! Any thoughts, readers? If so, mail them to P.O. Box 5624, Baltimore, MD. PC

Station Update

Call	Location	Freq	Pwr	Ant
AM				
FM				
New	Ithaca, NY	90.9	5	99′
KOHM	Lubbock, TX	91.1	20	450′
KVEE-FM	Grand Junction, CO	92.3	100	1875′
KPQX	Havre, MI	92.5	100	1485′
WGYL	Vero Beach, FL	93.5	1.3	482′
KDJW-FM	Amarillo, TX	94.1	100	1257′
KHFI-FM	Austin, TX	98.3	100	706′
WDMG-FM	Douglas, GA	99.5	100	1023′
WSUE	Sault Ste Marie, MI	101.3	100	990′
WAYX-FM	Waycross, GA	102.5	100	979′
New	Orangeburg, SC	102.9	3.0	328′
WSNX-FM	Muskegon, MI	104.5	50	624′
WMXQ	Moncks Corner, SC	105.5	1.4	475′
New	Niles, OH	106.1	3.0	328′

Key: D = Daytime, N = Nighttime, DA = Directional Antenna, DA1 = Same Pattern Day and Night, DA2 = Different Pattern/Power Day/Night, NDA = Omni Antenna Day and/or Night, * = Special Operation or Critical Hours, N/C = No Change.

PIRATES DEN

FOCUS ON FREE RADIO BROADCASTING

BY EDWARD TEACH

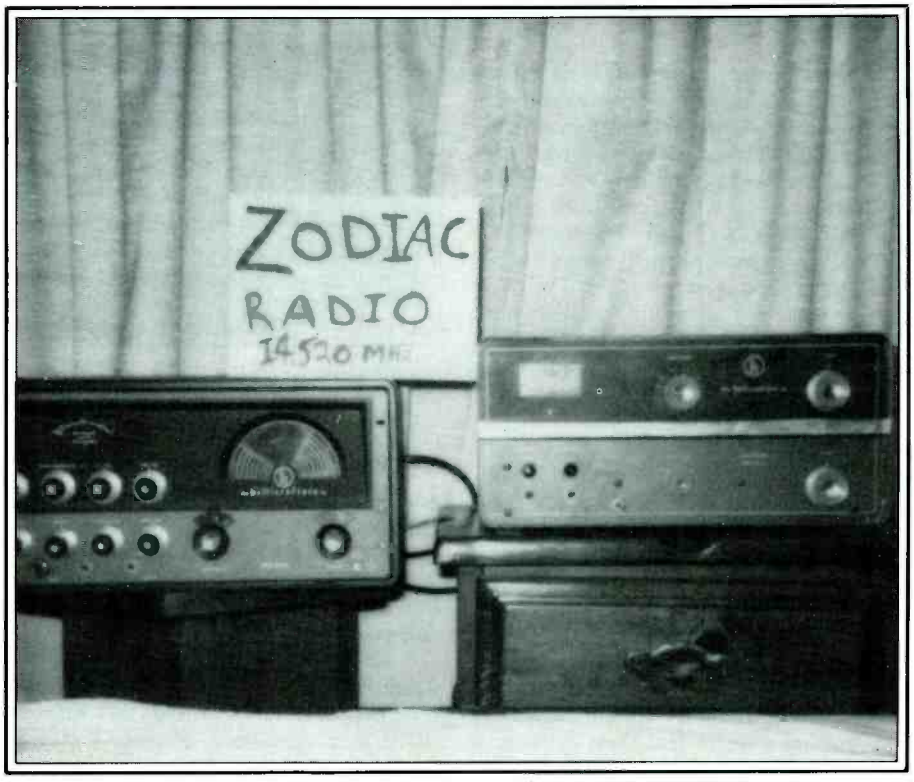
The European offshore pirate radio situation continues to draw the occasional perplexed question from a Pirate's Den reader. Fortunately, I've had a letter on file here for a couple of months now from Ary Boender of The Netherlands, who explains that **Radio Caroline** and **Radio Monique** "are both transmitting from my Ross Revenge, anchored in the North Sea." Ary says that Caroline has a twenty four hour service on 558 kHz and has a second program service at night on 963 kHz. Radio Monique broadcasts on 963 during the daytime. Ary includes an extensive hour-by-hour breakdown but I won't include it here as he says it changes frequently (disc jockey moves and such.) However, the list does indicate that Caroline, on 963, runs the all-rock **"Caroline Overdrive"** service from 2300 to 0300. Radio Monique, on 963, carries "Viewpoint 963" from 1900-2230 (2300 on weekends.) This is an umbrella title for that segment which carries all the various religious shows people had asked about earlier.

A new pirate, **Zodiac Radio,** was to have started broadcasts. The initial test program was to have run at an unspecified time on 14520 and have consisted of a replay of the H.G. Wells "War of the Worlds" broadcast. Broadcasts were then to air regularly and include rock and roll, old radio programs, live broadcasts of a comic (I'm not sure if they mean comic performances or reading comics from the newspaper) and editorials. Power is given as 350 watts and QSL information to be announced on the air. "Frank Marauder" who sent me the information said that "technical information" (perhaps he means assistance) was supplied from KNRH (now KCCR). This is a station to be on the lookout for it they do get on with regular broadcasts as they say they will.

A number of people checked in with pirate loggings:

The **Voice of Laryngitis** was heard by Paul Johnson in Arizona on 2325-2355 on 7415. The usual crew of Captain Willy, Cowboy Stanley, Barney the Seal and "Jerry Mathers, as The Beaver" were heard. Also noted that same evening at 0140 to 0200. Steven Sachs in Illinois also had them with satarical bits. The station was also found by Tim Tromp of Michigan.

Tim also bagged **Radio Northcoast International** on 3440 at 0520 with music and skits. Claimed to be broadcasting on an "uncountable number of frequencies" but gave none of them. Announced the Hilo, Hawaii address. It was also heard by Steven Sachs at 2305 with fifties music, frequent IDs, spoofs and fake commercials. It closed with an "Emergency Employee Drug Testing System." It was also heard by Woody Smith in Tennessee at 0513.



Here's the installation at Zodiac Radio. Note the old Hallicrafters transmitter.

The International Service of **Radio Free Wave** was found by Paul Johnson on 7425 at 0347 to 0426. Signals were very weak, says Paul, so he couldn't copy a lot of the content. There was a song by Warren Zevon, a talk on Oliver North, ID and music.

A new station, to me anyway, was also heard by Paul. This one ID'd as "This is KMUD from Marin County, California" playing a variety of music, they said it was running 30 watts, and would return later in the 41 or 85 meter band. Paul's initial log was 0030 to 0110 on 7435. Sure enough, Paul found them again, one kilohertz up this time, at 0205. The announcer wondered what other SWL'ers were doing and ID'd as "KMUD, the muddy sounds of Marin County" and gave the Hilo, Hawaii address.

Tim Tromp found WDOG on at 0014 to 0024 on 7415. The station played rock and had several IDs, noting that this was a test.

WYMN was the tentative ID of a station Tim heard on 7430 at the rather unusual hour of 1712. Music played was country/western, and folk, with a female announcer. WYMN is, indeed, an actual pirate and uses female announcers (WYMN = women) so it was undoubtedly the one you heard, Tim.

It may, or may not have been a pirate, Steven Sachs still isn't sure. He found a station on 3454 at 0006 to 0017 featuring a woman doing the Spanish numbers bit only with foods not numbers! "Tequila, Nachio, Burrito" etc!

Tim Tromp says he solved his **"Radio Damascus"** mystery. He'd heard a station with that ID but from an announcer who sounded like the same one on the **Voice of Free Long Island.** So it was! Turns out that the announcer was trying to fool a friend who'd never been able to hear Radio Damascus.

Can anyone up north provide some information on whether low power, no-license broadcasting exists in Canada? B.J. Anderson at 1055 Moosejaw Street, Penticton, BC V2A 5T5 Canada would like that information.

That ties things up for this month. Remember that your pirate radio news and loggings are always very welcome. That includes QSL information and copies, press clippings, station literature and word direct from operators about your stations, plans, programs. Photos, too, if you can. Thanks. Your input is always very much appreciated and helpful in turning out a news-filled column each month.

I'll be back next month with more pirate radio news and I hope you'll join me then!

CB SCENE

27 MHz COMMUNICATIONS ACTIVITIES

BY BILL SANDERS, SSB-295

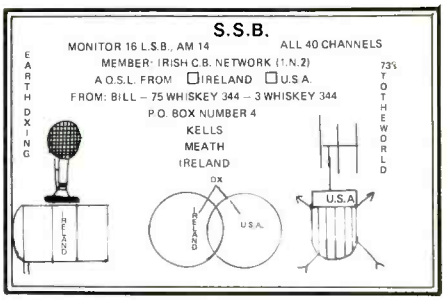
Ninja is the model name of Uniden's portable CB transceiver. It's a completely self-contained 40-channel rig built into a hand-held module. It features electronic up/down channel selector keys, volume and squelch controls located for easy one-hand operation, and selectable 1-watt/4-watt output.

The battery pack provides hours of use, and can be recharged overnight. The *Ninja* comes with a mag-mount center-loaded telescoping whip antenna, the battery pack and charger, a mobile power cord, and a carrying case.

While the *Ninja* makes an ideal emergency road assistance rig, it is also ideal for general emergency, sports, recreation, camping, hunting, and other non-highway uses. You don't see very many portable CB rigs, so we thought you'd like to get a peek at this one, which carries a suggested retail price-tag of $159.95.

For more information, ask John Heenan, Manager of Marketing Services, Uniden Corporation of America, 6345 Castleway Court, Indianapolis, IN 46250. Be sure to say you read about the *Ninja* in *Popular Communications*.

Uniden's new "Ninja" portable CB transceiver. Very slick!



Bill, SSB-9475-G, who's now in New Jersey, used this QSL when he was in Ireland a few years ago.

Getting Together

Bill Rausch, SSB-521-B, who is in the Army and stationed in Georgia, asks us to say a few words about meeting other members of the *SSB Network* on the air. In many areas, Channel 38-LSB has a favorite gathering place for members. Some nights (especially Sundays), around 7 or 8 P.M. local time, there are informal *SSB Network* check-ins and roundtables. If there isn't any such activity in your own area, *you* could be the catalyst to make it happen.

Bill, SSB-9475-G, of Bellmead, NJ passed along one of his QSL cards that he used while he was in Ireland during 1979-80. He's been on 27 MHz for almost fourteen years now, and a Sidebander for a goodly portion of those years. Says he's glad to see that *POP'COMM* has installed a column devoted to CB'ing.

A QSL from Greenland, and an offer to swap; nothing could be finer! A bright green card from SSB-8A is available for swapping and subsequent display at your station. To get one, send your own QSL and a stamped (U.S. 22 cents) #10 (long) envelope to: SSB-8A c/o The SSB Network, P.O. Box 908-A, Smithtown, NY 11787 and tell Joe you'd like to swap cards.

Tom Fletcher *(Witch Doctor)* and his wife Clara *(Nurse)* were declared "Distinguished Citizens" of Louisville, KY by Mayor Jerry Abramson last November (during REACT Month.) Tom (who is 80-years young) has been in REACT for more than fifteen years. He and Clara are the only black members of Louisville Metro-REACT. Thanks to R.C. Watts, Louisville, for letting us know about this excellent citation for service to the community.

R.C. Watts also comments about continuing abuses of Channel 9 and how difficult it is for people to get emergency calls through under such conditions. He says that from time to time he hears high-powered stations on Channel 9 using *Whiskey* callsigns doing nothing more useful than ripping up the frequency out of indifference to other operators.

A call for assistance can come via Channel 9, but it can also arrive by mail. Just such a call arrived here from Edward E. Murray, 606 West Locust St., Fairbury, IL 61739-1053. Ed writes that he's trying to figure out how to connect a Shure Model 526T base station power mike to a Realistic *Navajo TRC-459* transceiver. If anybody has information on the proper pin connections, please contact Ed directly.

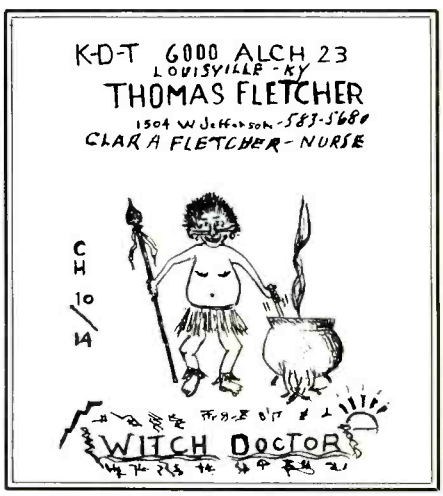
Our overseas QSL of the month is from SSB-8A in Greenland. He'd like to swap QSL's with you. See text for details.

Nothing Lasts Forever

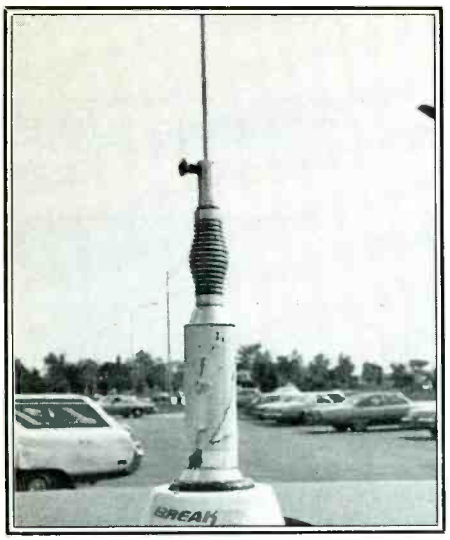
As the winter winds down, it's time to take a look at how the exterior components of your CB station have fared. I mean the antenna and its mounting, also the coaxial feedline. Several winters' worth of weather take their toll and, depending upon your location, you could well find that the beautiful antenna installation you had only two or three years ago is a tired and pathetic relic. See how your antenna system checks out on an SWR bridge, if it doesn't look as rosy as it did the last time you checked, then it may be time to make some replacements.

Carefully inspect the covering of the coaxial cable for damage such as splits, punctures, tears, cracks, cuts, and abrasions. If you see any of these, then replace the entire cable. Inspect the antenna to make certain that all of the parts are still intact, and that the connector is still tight and dry.

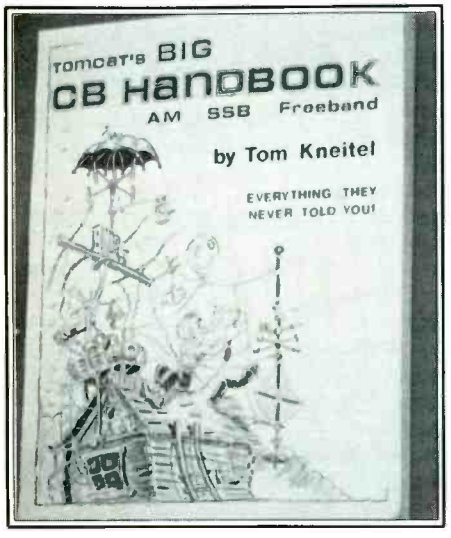
Don't overlook the mobile antenna, that takes a beating, too. I've seen some very sad-looking mobile whips lately that should have been retired long ago. I snapped a photo of one seen at a CB coffee break just



The Witch Doctor and his XYL, Nurse, were given recognition for their community service. Ya' done good and we're all proud!



Would you look at the shabby condition of this mobile whip? Check out the coil and the replacement set-screw. Now, inspect your own base/mobile antenna system to see how it survived the winter.



Probably the biggest CB handbook ever written (at least, the biggest we've ever seen), and it's brand new from the irreverent typewriter of Tom Kneitel. It's "the" CB book.

recently that says it all. Besides the fact that the whole antenna/coil were shot, the poor guy had his mag-mount located on a vinyl covered car top! Not only a wonder that he got out at all, but that the antenna managed to hang on at more than 40 m.p.h. On the other hand, maybe the appearance of the antenna bears mute testimony to the fact that it fell off the roof one too many times.

It's Here!

I've had my copy of *Tomcat's BIG CB Handbook*, by Tom (*Tomcat*/SSB-13) Kneitel, at the shack here for a few weeks and it's an absolute treasure chest of useful 27 MHz information relating to AM, SSB, and *Freeband*. Tom has outdone himself with this huge 221-page (large 8½" by 11" size) book that amply covers *all* of the bases while simultaneously managing to deftly kick many of CB's sacred cows square in their respective rumps. It is loaded with ideas, opinions, long range antenna projects, funny things to cut out and hang on your wall, information on FCC enforcement, operating techniques, QSL'ing ideas, and more. It's got *all* of the CB codes and signals (including several real pips), a large CB lingo dictionary, a comprehensive state-by-state mobile channel directory, a troubleshooting guide, plus lots of off-the-wall CB-type humor generously sprinkled throughout. Plenty of worthwhile information on Sidebanding, too; and, by the way, the book has been selected as the official handbook of the *SSB Network*!

You'll find this an immensely useful and enjoyable handbook, no matter what you level of experience/expertise, regardless of whether your specific interest lies in the area of AM, SSB, or somewhere in the Twilight Zone above and beyond the regulation 40-channels. If your favorite CB dealer doesn't have it in stock, you can order it by mail at $13.95 per copy (plus $2 postage/handling to USA/Canada/APO/FPO from CRB Research Books, Inc., P.O. Box 56, Commack, NY 11725. (N.Y. State residents include appropriate sales tax.)

Little Sir Echo

Barking Dog, of Paris, TX writes to ask if it's legal to use an echo chamber when operating on CB. There used to be accessories that would do this, and there may still be such devices on the market.

So long as you don't crank it up so far that you're overmodulating, there isn't any FCC regulation per se against using an echo chamber. However, I can't think of any valid reason why anybody would want to go out of their way to deliberately distort their voice and sound like someone from the planet Mongo. Most of the guys I've heard using echo chambers sound like they're so dumb they don't realize that you can use AM mode at night.

If the echo chambers don't get me, we'll be back on frequency here in time for the next issue. If you've got a shack photo, or a QSL, send it along. PC

LISTENING POST

BY GERRY L. DEXTER

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

Few but the most casual of shortwave listeners have missed hearing the so-called barnyard interval signal from Radio Botswana. You can tune it in (7255 or 4820) sometimes as early as 0340—nearly twenty minutes before the station signs on. We've all probably paused and listened to that collection of moos, cowbells, roosters and such—even if we've already heard it dozens of times. A moment's listening to that interval signal conjures up images of a farm outside Gaborone, the sun beginning to build the day's African heat, people and animals waking to another day of doing what they're meant to do. A one story house, complete with shortwave radio tuned into the BBC's World Service news.

So, it was both amusing, and a bit sad, to read the story in *DX Ontario*. It seems that Listening Post reporter Robert Ross was giving a talk on shortwave listening to a local ham radio club. In the course of his speech, he mentioned the unusual interval signal of Radio Botswana, whereupon one ham in the audience broke out into hysterical laughter. Afterwards, the ham introduced himself to Robert and apologized for his outburst. The ham was Ian Kennedy, VE3ONK, one time Chief Engineer for Radio Botswana. It turns out that the entire "barnyard" interval signal was strictly an in-the-studio production! Kennedy had the starring role as the cow, someone else was banging on a cowbell and other staffers were producing other animal noises! Somehow, the Radio Botswana interval signal lost its magic with that revelation. It'll never sound quite the same again, never create the mental images it used to. Maybe this story, however amusing, was better left unreported!

Here's the deal: "We'll send our people over to repair your broadcasting machine if we can then use it for our own purposes for a good part of every day." And the diplomats of the Mali government signed on the dotted line and the Chinese arrived and went to work and rejuvenated Mali's two—100 kW shortwave transmitters. Now guess where some of Radio Beijing's transmissions are coming from these days? 9665 and 9770 are two of the spots and probably 11715 as well. Listening Post reporter, David Alpert of New York, was one of the first listeners to spot this unexpected development on the shortwave bands.

Deutsche Welle is also nosing around for further relay possibilities. For two weeks, DW was conducting tests over the facilities of Radio Nacional (Radiobras) in Brazil, apparently as a possible means of improving coverage in South America. At this point, it's too soon to say if the arrangement may become a long term one, but the way things often happen, such a situation could already be in regular use by the time you read this.

Michael Loran operates out of this well-equipped monitoring post in Azusa, California.

Back at Deutsche Welle's main transmitting plant at Wertachtal, the Voice of America came on the air with a 500 kilowatt facility for broadcasts to Europe, the USSR and North Africa. The most recent available schedule for this installation is: 6025 from 0530 to 0730, 6060 from 0500 to 0530, 6060 from 2200-0000, 7105 at 0200-0500, 1600-1800 on 7270, 1800-1900 on 9530, 1900-2100 on 9575 and 0730-0800 on 11840 in various languages.

Kol Israel, which was off the air for several weeks as the result of a journalist's strike, returned to shortwave. One channel in the 13 MHz band remained active, carrying the Israeli Defense Forces station Galei Zahal which is normally heard only on medium wave and FM. That's the second time a broadcaster strike has resulted in an appearance on shortwave by Galei Zahal—something to keep in the back of your head the next time Israeli broadcasters won't sign a contract.

13 MegaHertz is seeing increased usage by broadcasters. We've noted the appearance recently of US stations WRNO and WYRF in this range which indicates an FCC go-ahead so the others are probably active in this range by now, too.

Some months ago we reported on the closing of the Australian time station VNG. Now, at least on a temporary basis, there is a replacement. A time station is being operated by the Australian Navy on a twenty four hour a day basis, with pips only—no voice identifications. Frequencies used are 6448 and 12982, each 10 kilowatts. Reports can be sent to Dr. Graham Harvey, National Standards Commission, P.O. Box 282, North Hyde (Sydney) NSW 2113, Australia.

Speaking of Australia, Radio Australia is making plans to celebrate fifty years of external service broadcasting next year. They

An artistic QSL from RAI in Rome. Courtesy: Sander J. Rabinowitz.

Listening Post monitor Bob Zirkelback in Pleasant Hill, CA is equipped for all kinds of monitoring - including RTTY, though the photo doesn't show that equipment.

John Leary, W9WHM of Fortville, Indiana sent us a slew of photos of WHRI. This one shows the WHRI antenna firm with transmitting building in the background.

are seeking input from listeners which may be used in a written and audio history of the station. Specifically sought are early Radio Australia QSL cards, program schedules, and any early day memories old time listeners may have concerning the station. Anything which is used will result in a special Bi-Centennial Diary being sent as a thank you. Items should be sent to Bi-Centennial, Radio Australia, Melbourne, Australia.

King's radio: It is one of the world's most unusual shortwave stations and it has just returned to shortwave after going off the air way back in 1972. We're talking about Or Sor, the Kin's Service from the royal household in Bangkok, Thailand! It's scheduled, in Thai only, daily, except Sundays at 1030 to 1200 on 6150. To our knowledge, no one in North America has ever heard this station, but don't let that stop you from trying! The mailman, except for the loggings, had it way too easy this month:

Paul Johnson in Phoenix says he's been busy making a lot of music tapes, but is now back into hunting DX. We're glad of that, as Paul's logs are always first rate.

David Kammler says he is new to SWL'ing, but not without radio experience, since he put in five years in Naval communications. David is using an ICOM R-71, Sony ICF-7600D and a Realistic DX-66 along with three longwire antennas. Welcome David! You had some nice logs there and we used what we could, but please follow the reporting format.

Sander J. Rabinowitz forwards some QSL's along with his logs and both are very welcome. We'll try and work them in as we go along.

Takashi Kuroda in Japan notes that he's twenty five years old, and has begun DX'ing again after a five year layoff. Takashi has a pair of ICOM R-71's and a Sony ICF-6800. He does a lot of international broadcast monitoring, but is also caught up in hearing the more exotic stuff to be found on the lower frequencies. Takashi says he'd be happy to hear from anyone who wants to exchange listening information. His address is #201 Nakamura-so, 1-4-9, Higashi-Ayase, Adachi-Ku, Tokyo 121, Japan.

We'd sure like to hear from you next month! Your logs, comments, questions, shack photos, QSL's you don't need returned, news clippings and what have you are always welcome so please check in regularly!

Here are this month's reports.

Shortwave Broadcast Loggings
All Times Are UTC
English Unless Otherwise Noted

Alaska: KNLS on 7355 at 1500 in RR (Kuroda, Japan); **Memory Lane** at 1745 (Zirkelbach, CA).

Albania: R. Tirana, 6200 at 2345; 7065 at 0230 (Rabinowitz, MI); 9760 at 2335 (Ross, ONT); 0350 (Northrup, CT).

Algeria: R. Algiers, 9509 at 1940 w/pops & rock (Alpert, NY).

Argentina: RAE, 11710 at 0402 w/sked, nx (Johnson, AZ).

Ascension Island: BBC Atlantic Relay, 15260 w/World Service at 2130 (Zirkelbach, CA).

Australia: R. Australia, 15240 at 0620 w/mx, ID, sports (Johnson, AZ); 9580 at 1300 (Rabinowitz, MI).

VLW15 Perth, 15425 at 0620 w/horse race highlights & sports (Johnson, AZ).

Austria: R. Austria Int'l., 6000 at 0357 w/multilingual ID's & into GG at 0400 (Alpert, NY).

Benin: ORTB, 4870 at 0452 in FF w/tone, anthem, ID at 0500 & into Afro-pops (Johnson, AZ).

Bolivia: R. Padilla (tentative logging), 3475.5 in SS at 0305 w/talk, anthem, s/off. No ID heard (Ross, ONT).

Botswana: R. Botswana at 0355 w/pseudo-barnyard IS, EE prayer, rx message, choir singing, YL in setswana (Zirkelbach, CA); 0350 w/IS & anthem, skeds (Kammler, CA).

Brazil: Lins R. Clube, 3225 in PP at 0003-0033 w/guitars, mandolins, OM & YL talks (Ross, ONT).

R. Clube de Marilia, 3235 at 2347-0006 in PP w/accordion/guitar mx, mentions of "de Marilia," freq (Ross, ONT).

R. Aparecida, 5035 in PP 0054-0059, ID, freq, jingles, mentions of Brazil (Ross, ONT).

R. Cultura, Sao Paulo, 17815 in PP w/Brazilian mx, OM announcer at 2245-2300 (Mierzwinski, PA).

Bulgaria: R. Sofia, 9700 at 2326 (Gilbert, CA).

Canada: RCI, 11945 at 2115 (Neff, FL); 15260 at 1820 (Loran, CA).

CBC N. Quebec Svc., 11720 at 1545 (Neff, FL).

Chile: R. Nacional de Chile, 9550 at 1100 in SS w/nx (presumed) & talk (Kuroda, Japan).

China: R. Beijing, 5030 at 1030 (Loran, CA); 6890 in CC at 2355 (Mierzwinski, PA); 9645 at 1235 w/letterbox pgm (Neff, FL); 9665 at 1200 (Rabinowitz, MI); 1254 just pre-s/off (Gilbert, CA), 11715 at 0345 w/language lesson (Watts, KY; 11980 at 0353 (Johnson, AZ).

Colombia: Cadena Nacional, 4975 at 0232 in SS. ID as "Radio Cadena Nacional Colombia" (Kammler).

Cook Islands: R. Cook Isl., 11760 weak-to-fair w/commercials, island & pop mx, time checks (Johnson, AZ). Time?-- Ed.

Costa Rica: Radio for Peace, 7375 w/UN Radio pgm 0345-0355 then mx tp s/off annct at 0405 (Watts, KY).

R. Relaj, 4832 ID's & time checks in SS at 0445 (Watts, KY); 0842 (Kammler, CA); 0310 (Neff, FL).

Cuba: R. Havana Cuba, 6140 at 0230 w/nx, anti-USA talks (Zirkelbach, CA); 11795 at 1830 s/on to Europe (Alpert, NY).

Czechoslovakia: R. Prague, 5930 at 0442 in SS (Gilbert, CA); 0100 (Rabinowitz, MI); 0316 (Neff)

East Germany: RBI, 9730 at 0050 w/mx, nx, commentary (Rabinowitz, MI).

Ecuador: La V. de los Caras, 4795 in SS at 0343 w/mx, talks (Ross, ONT).

R. Centinela del Sur, 4890 in SS at 0153 w/mx, ID's using echo chamber, off at 0214 (Ross, ONT).

R. Quito, 4920 in SS w/nx & interviews at 0330 (Watts, KY).

HCJB on 6230 at 0230 w/**DX Party Line** (Neff, FL); 11775 at 0630 w/**Saludos Amigos** (Lord, CA).

Egypt: R. Cairo, 9475 at 0313 w/mx, ID & middle east mx (Neff, FL).

England: BBC World Service, 9570 at 2204 w/**News Desk** (Gilbert, CA); 9640 at 0650 w/**Meridian** (Lord, CA).

Finland: R. Finland Int'l., 11850 at 1504 to middle east (Gilbert, CA).

France: RFI w/**Paris Calling Africa** at 1648 on 17620, FF lesson, nx (Johnson, AZ).

French Guiana: RFO Guyane on 5055 in FF at 0856 (Kammler, CA). Listed only as irreg ops-- Ed.

Gabon: Africa #1, 4830 at 0515 in FF (Zirkelbach, CA); 15475 at 2039 w/reggae (Neff).

R. Japan relay via Africa #1 on 11800 at 2300 w/General Overseas Svc. (Alpert, NY).

Ghana: Ghana Bc Corp, 4915 at 0600 w/local nx & activities (Zirkelbach, CA); 0610 w/nx (Kammler)

Greece: V. of Greece, 7430 at 1610 in Greek, 9935 at 1550 in Greek, 11645 at 2250 w/mx (Kuroda, Japan); 9420 at 0320 w/mx (Johnson, AZ); 15630 at 1235 w/nx in EE then into Greek dj (Northrup, CT).

Guam: AWR, 9870 at 1500 w/**Through the Bible** (Zirkelbach, CA); 11980 at 1550-1600 s/off (Kuroda, Japan); 17865 at 0415 w/ID & into oriental mx, silent at 0418 & again at 0430 but carrier remained on (Johnson, AZ).

Guatemala: R. Maya de Barillas, 3325 in SS at 0306 w/organ//guitar mx, singing anthem at 0333 & s/off 0335 (Ross, ONT).

La V. de Nahuala, 3360 at 0122 w/talks in the Mam language, marimba mx, ID at 0206 (Ross, ONT).

TGNA R. Cultural, 3300 at 0645 in SS w/ID & mx (Kammler, CA).

Honduras: La V. de Mosquitia, 4910 at 2337-0000 w/gospel mx pgm & talks in Miskito, fanfare & ID (Ross, ONT).

Hungary: R. Budapest, 9520 at 0206; 9835 at 0130 w/history pgm in EE but ID & s/off in Hungarian (Rabinowitz, MI); 12000 in un-ID lang at 1230 (Northrup, CT).

Iceland: Icelandic State Bc Svc, 9985 at 1901 in Icelandic w/long talk, possible nx, many mentions of Reykjavik. ID's "Utvarp Reykjavik" at 1930 & off (Ross, ONT).

India: AIR, 9910 at 0100 w/nx & commentary, s/off at 0115 (Gilbert, CA); 15305 in possible Hindi at 1230; also 15335 (Northrup, CT).

Indonesia: V. of Indonesia, 15105 (I suspect he means 15150-- Ed.) at 0820 (Kammler, CA). Bet time shown here is Pacific instead of UTC. All reports to the column should be stated in UTC only, please. Actual time most likely 1620 UTC-- Ed.

Israel: Kol Israel, 9435 at 2000 (Alpert, NY).

Iran: VOIRI, 9022 at 1710 in GG (Kuroda, Japan); 0130 w/ID & pgm in possible SS (Rabinowitz, MI); 15084 at 1235 in un-ID language (Northrup, CT). Undoubtedly Farsi-- Ed.

Italy: RAI, 9575 at 0120 w/start of FF pgm (Gilbert, CA); 17780 at 1701 w/IS, into II language nx (Johnson, AZ).

Ivory Coast: RT Ivorienne, 6015 in FF at 0623 (Gilbert, CA).

Japan: R. Japan, 9505 at 1900 w/nx (Lord, CA); 5990//9695 at 1430 (Zirkelbach, CA); 11945 (via Canada) at 2115 w/**Listener's Corner** (Neff, FL); 15300 (via Gabon) at 2300 w/nx, commentary

Abbreviations Used in Listening Post

AA	Arabic
BC	Broadcast/ing
CC	Chinese
EE	English
FF	French
GG	German
ID	Identification
IS	Interval Signal
JJ	Japanese
mx	Music
NA	North America/n
nx	News
OM	Male
pgm	Program
PP	Portuguese
RR	Russian
rx	Religion/ious
SA	South America/n
SS	Spanish
UTC	Coordinated Universal Time (ex-GMT)
v	Frequency varies
w/	With
WX	Weather
YL	Female
//	Parallel frequencies

(Alpert, NY); 17810 at 0348 w/**Science Today** (Johnsan, AZ).

NSB radio at 0607 an 9595 in JJ w/talks (Johnsan, AZ).

Kuwait: R. Kuwait, new 11665 (replaces 11675-- Ed.) at 2050 w/ID, s/off at 2100 (Kuroda, Japan); 1800 w/pgm about Elvis (Neff, FL).

Lebanon: King of Hope, 6280 at 0423 in AA/EE w/mx & singing, YL talking in both languages. Faded0442 (Ross, ONT).

Lithuanian SSR: R. Vilnius, 11790 (via R. Moscow-- Ed.) w/2300 s/on w/nx (Kurada, Japan).

Malaysia: R. Malaysia-Sarawak, 4950 at 1400 w/talk about problems of SE Asia (Zirkelbach, CA); at 1010, ID at 1023 (Loran, CA).

Mali: R. Beijing via new Mali relay on 9770 at 0300 opening to West Coast of NA //11715 (Alpert)

RTV Malienne, 4784//4835 at 0601 w/mx (Loran, CA). Presume FF-- Ed.

Malta: R. Mediterranean, 6110 w/nx iat 2237 (Watts, KY); 2255 w/pgm on UN, ID, freq, address, & rock mx (Ross, ONT).

Marshall Islands: WSZO, 4980 at 0804 w/country-type mx, partial ID, YL annct played same some over & over (Kammler, CA).

Mexico: R. Educacion, 6185 in SS w/ID, OM/YL onncrs at 0733 (Kammler, CA).

R. Mexico Int'l., 2350 in SS on 17765, mx, ID (Mierzwinski, PA).

Mongolia: R. Ulan Bator, 12015 at 1200 w/**This is Radio Ulan Bator** annod by OM, nx (Kuroda, Japan).

Morocco: RT Marocaine, 15105 at 1235 w/nx in FF (Northrup, CT).

R. Monte Carlo Middle East, via Nador, Morocco, 13695 at 1230 in FF, no ID heard (Northrup, CT).

Mozambique: R. Mozambique, 3210//4863, likely PP mx, ID "Radio Mocambique, transmite a emissao interprovincial da Maputa e Gaza" (Ross, ONT).

Nepal: R. Nepal, 5005 at 1550-1610 in Nepali, ID by OM, most of pgm was talking (Kuroda, Japan).

New Caledonia: R. Noumea, 7170 at 0617 in FF w/EE mx. Strong QRM from Moscow on 7175 (Johnsan, AZ); in FF w/50's mx at 0758 (Kammler).

New Zealand: R. New Zealand, 11780 at 0600 w/island nx, stock market, regional wx; also 17705 at 0305 w/pops, but weak (Johnson, AZ); 15150 w/wx at 1819 (Loran, CA).

Netherlands: R. Netherlands, 11740 at 2030 w/**Happy Station** pgm (Neff, FL); 15560 at 1225 s/off w/ID (Northrup, CT).

Netherlands Antilles: R. Netherlands relay on 9590 at 0230 (Neff, FL).

TWR, 9535 at 0325 w/rx mx (Northrup, CT).

Nicaragua: V. of Nicaragua, 6100 at 0310 w/nx (Kammler, CA).

Nigeria: V. of Nigeria, 7255 at 0540 w/world nx & commentary (Kammler, CA).

North Korea: R. Pyangyang, 11735 w/mx (Gilbert, CA); 15115//15160 to NA at 0000, apparently replaces 15140 (Alpert, NY).

Northern Marianas: KYOI, 15405 at 2230 w/pops, ID, requests for letters. Bad QRM from DW (Zirkelbach, CA).

KFBS, 11980 at 2200 w/ID in both EE & un-ID language, ID & into talks (Neff, FL).

Norway: R. Norway Int'l., 15180 at 1240 w/national nx, no ID (Northrup, CT); 15310 at 1556 in EE/NN, IS, ID, skeds in NN (Zirkelbach, CA); 15315 w/IS, into NN (Gilbert, CA).

Pakistan: R. Pakistan, Azad Kashmir, 4791 at 1510 in un-ID language, ID at 1515 (Kuroda, Japan).

Paraguay: R. Nacional Paraguoy, 9735 at 1000 in SS, mx & talk (Kuroda, Japan).

Peru: R. Ancash, 4991 at 0253 in SS w/mx, ID (Ross, ONT).

R. Altura, 3340 at 0321 in SS w/mx, OM in SS w/ID (Ross, ONT).

R. Nor Peruana, 9655 at 1140 in SS. YL w/talk, many ID's, mx (Ross, ONT).

R. Eco (tentative), 5010 in SS w/lengthy mx selection at 0540 (Kammler, CA).

Philippines: VOA relay on 15290//15305 at 2220 w/nx (Zirkelbach, CA).

Poland: R. Polonia, 9525 at 0400 s/on after piano IS (Gilbert, CA).

Portugal: R. Portugal, 9705 at 0309 w/nx (Gilbert, CA); 9680 at 0037 w/nx (Rabinowitz, MI).

Romania: R. Bucharest, 6155//9510//9570 at 0200 (Rabinowitz, MI).

Rwanda: DW Relay at 0432 on 9565, but weak (Johnson, AZ).

Seychelles: FEBA, 9610//11810 at 0310 in Swahili w/IS, ID's as "FEBA Radio" (Ross, ONT).

Singapore: SBC Radio 1, 1546 on 11940 w/easy listening mx (Jahnsan, AZ); 1620 w/easy listening mx & pops, ID, nx at 1700 (Zirkelbach, CA).

Solomon Islands: SIBC at 0625 w/cricket match in mix of EE & Pidgin (Johnsan, AZ); 0740 w/ID, nx, shipping, tides, local commercials; also 0745 on 5020 w/similar but paat sigs (Kammler, CA).

S. Africa, Rep. of: Radio RSA, 9580 at 0330 w/nx features (Northrup, CT); 11900 at 2152 w/nx (Gilbert, CA); 11730 at 0202 w/nx, 9585//11900 at 0610 in FF (Johnsan, AZ).

Radio 5, 4880 at 0330 w/pop mx, ID, contest (Neff, FL); 0400 w/breakfast pgm, nx, pop mx, ID's, OM dj (Ross, ONT).

S. Korea: R. Korea, 9570 at 0700 s/an & into Korean (Gilbert, CA); 9570//9750 at 1440 w/**Korea Calling** (Zirkelbach, CA); 15575 at 2330 s/on. Gives NA sked as 0600 on 6060/9570; 1400 on 9750/15575; 2330 on 15575 (Alpert, NY).

Spain: Spanish Foreign R., 7450 at 1720 in SS (Kurada, Japan); 0549 w/IS, anthem, into SS (Johnson, AZ); 9630 at 0002 w/nx (Gilbert, CA); 9765 at 1927 w/nx recap & into FF at 1930 (Alpert)

Sri Lanka: SLBC on 9720 at 1231 s/on. w/ID, rock mx, time check at 1245, into **Miracles** gospel pgm (Ross, ONT).

Sweden: R. Sweden Int'l., 6045 (ex-11705) at 2300, but heavy QRM from Moscow (Alpert, NY); 9565 at 1230 w/nx & **Sweden Calling DX'ers** (Kuroda, Japan).

Switzerland: Swiss R. Int'l., 9885 at 0205 (Neff, FL); 1514 on 11840 (Gilbert, CA); 1225 in SS on 12035 (Northrup, CA); SS at 0045 (Johnson, AZ).

Syria: R. Damascus, 11625 at 2200 w/AA mx, nx headlines at 2206 & off. Nothing heard on announced //9950/12085 (Alpert, NY).

Tahiti: R. Tahiti, 0641 on 6135 w/island mx, FF; at 1535 on 11825//15170 in FF (Johnson, AZ).

Taiwan: V. of Asia on 7445 at 1530 w/nx (Kuroda, Japan).

Turkey: V. of Turkey, 9445 at 2300 s/on to NA (Alpert, NY). Replaces 9560-- Ed.

Tunisia: RT Tunisienne on 7475 at 0510 in AA, apparent nx, then mx & rx talk (Mierzwinski, PA).

Ukranian SSR: R. Kiev, 7185 at 0300 (Rabinowitz, MI).

United Arab Emirates: UAE Radio, Dubai, 15435 at 1338 w/wx, nx headlines. Asked for reports addressed to P.O. Box 1695, Dubai (Alpert, NY).

V. of the UAE, Abu Dhabi, 11865 at 0300 in AA w/mentions of Abu Dhabi (Gilbert, CA).

United States: WINB, 15295 at 1930 w/rx pgm & s/off announcement (Neff, FL).

WYFR, usual rx pgm at 0705 on 9660 (Alpert).

WCSN, 9850 at 0305 (Neff, FL); 15225 w/1600 s/on "Welcome to our Sunday broadcast" & into rx svc from Boston (Alpert, NY).

KCBI, 11735 at 1940 w/mx, ID, rx pgm (Neff, FL).

KVOH, 9500 at 0147 w/**High Adventure** pgm (Lord, CA); 17775 at 2115 (Neff, FL).

WRNO, 15410 at 1835 w/Tap 10 countdown (Neff, FL).

USSR: R. Moscow, 15455 at 2230 (Lord, CA); 15415 at 0214, 11670 at 0410 (Johnson, AZ); African Svc (in EE) ends at 1800 on 9490 & into FF (Alpert)

Kamchatka R., 4485 at 0713 w/OM & YL in RR (Kammler, CA).

Vatican: Vatican R., 15090 at 1230, no ID, un-ID language (Northrup, CT); 6005 at 0140 (Rabinowitz).

Venezuela: R. Nacional, 11862 in SS at 0315 (Gilbert, CA); 0330 on 11860 w/mx & ID (Northrup).

Ecos del Torbes, 4980 at 0300 in SS, mx & mentions of San Cristobal (Mierzwinski, PA).

Vietnam: V. of Vietnam, 9840 at 1600 w/YL reading regional nx (Zirkelbach, CA).

W. Germany: DW, 9565 at 0135 w/features (Neff, FL); 15270 at 0216 in GG (Johnson, AZ); 13990 at 1100 in JJ (Kuroda, Japan).

Sudwestfunk, 7265 at 0215 in GG w/American mx, YL annct. From Rohrdorf (Mierzwinski, PA).

Yugoslavia: R. Belgrade, 6100 at 2144 w/xylophone IS, 2145 s/on annct in SS, into nx (Alpert, NY).

Zaire: La V. di Zaire, 15245 at 2223-2302 in FF w/YL annct, Afro pops, local mx (Ross, ONT).

That's the lot. And muchas gracias to the following: Sander J. Rabinowitz, Farmington Hills, MI; Mark Northrup, Danbury, CT; Earle N. Lord, Westchester, CA; Frank J. Mierzwinski, Reading, PA; Michael Loran, Azusa, CA; Takashi Kuroda, Tokyo, Japan; Bob Zirkelbach, Pleasant Hill, CA; George Neff, Tampa, FL; David R. Alpert, New York, NY; K. David Kammler, Ridgecrest, CA; R.C. Watts, Louisville, KY; Warren Gilbert, Sherman Oaks, CA; Robert S. Ross, London, Ontario and Paul Johnson, Phoenix, AZ.

Until next month - Good Listening! **PC**

Please send all reader inquiries directly.

RADAR REFLECTIONS

RADAR DETECTORS AND THEIR USE

BY JANICE LEE

Committee Kills Wisconsin Detector Ban

A torrent of phone calls and letters from Wisconsin motorists convinced the Assembly Highway Commnittee in early October to soundly defeat a bill outlawing the sale and use of radar detectors. The vote was 11-1 against Assembly Bill 523.

The action marks the second time this year that Wisconsin lawmakers have rejected a radar detector ban. Rep. Spencer Black, a Madison Democrat, originally offered the proposal last year as an amendment to legislation raising the speed limit to 65 mph on rural interstate highways.

Introducing AB-523 in late August, Black said the ban was needed to help police cope with the higher speed limit. "Adoption of the 65-mph speed limit has made vigorous enforcement of speed limit laws more important than ever," he argued, claiming the sole purpose of detectors "is to dodge law enforcement." Under the threat of a $200 fine, the bill would have outlawed both the sale of radar detectors and the operation of a vehicle equipped with a detector.

When the Highway Committee brought the measure up October 6th, the only supporting vote Black got was from Republican Assemblyman Terry Musser. The remaining committee members realized that radar detectors have not been proven a threat to safety or enforcement.

"Once again, our members have come through," commented RADAR's Janice Lee. "With more than 3,500 associate members across the nation, we can be assured that when a threat arises, they will respond. There is a good chance this victory would not have occurred without the help of those Wisconsin motorists who are not afraid to speak up for their rights."

Legal "Loophole" On Washington Speeding Tickets Disappears

Seattle vs. Peterson

Those three words have been responsible for the dismissal of numerous radar-backed speeding tickets in the state of Washington. Unfortunately, Seattle vs. Peterson recently lost its zing in the state's courtrooms.

"I've probably beat more traffic tickets on Seattle vs. Peterson than any other attorney," boasted Scott McDonald, a Kirkland lawyer who said he's handled about fifty cases in district courts across the state and tells his clients they have a 95-percent chance of success.

The precedent in question refers to a 1985 decision by the state Court of Appeals, which ruled that radar is an acceptable tool, but that prosecutors must show the radar units used in the cases actually work. In many courts, all a defendant has had to do is ask the judge to suppress or strike the radar evidence based on Seattle v. Peterson. If prosecutors fail to present any expert testimony regarding the radar unit, judges often dismiss the cases.

Some judges began accepting affidavits from radar technicians attesting to the machines' effectiveness, until the statements were ruled inadmissible because they are hearsay.

"In the last six months, more and more people have caught on" to the Seattle vs. Peterson defense, said Kelly Thomas, a King County deputy prosecutor. In some courts, 30-40 percent of all tickets are contested on the grounds of the 1985 decision, and judges reportedly toss out dozens of contested tickets at a time rather than hearing each one.

But even though this particular defense was removed in early September, RADAR believes it is a healthy sign that so many drivers are questioning the validity of speeding citations.

Ohio Mayor Resigns Over Speed-Trap Controversy

After a crowd of about fifty people launched an attack on the traffic record of the police department and mayor's court, Wilmot, Ohio, Mayor Jack Williams said his bad heart couldn't take any more and he resigned.

The northwestern Ohio village, located at the junction of U.S. routes 62 and 250, collects more traffic fines in a month than many surrounding towns collect in a year. Wilmot projects $40,000 to $52,000 in fines this year. The village took in $6,875 in April alone—about double the amount collected in three neighboring towns combined.

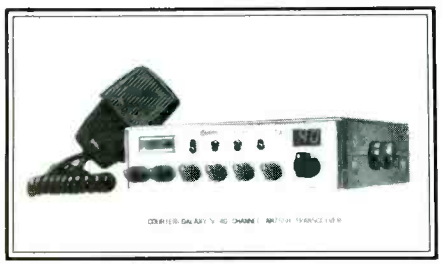
But complaints and negative publicity about Wilmot's speed-trap reputation proved too much for Williams, who recently had triple-bypass heart surgery. "I've been getting along beautiful until this past month," the mayor said in early August. "But, when I went to the doctor, he said my blood pressure's very high, my sugar's very high. I told him what was going on, and he said, "You're under stress. Get the hell out."

Before bowing out, Williams made a few changes to make life easier for motorists. He had stop signs removed at an intersection where there is also a traffic signal, removed a no-parking sign that the council apparently never authorized, and decided to allow a turning lane at the town's main intersection. Drivers who are cited and plead guilty will be able to save court costs by mailing in their fines rather than having to show up in m PC or's court.

Janice Lee is the Editor of Monday, A.M., *the newsletter of Electrolert, Inc.*

PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS



Super Deluxe C.B. Sideband Radio Now Available From Fanon Courier

Fanon Courier announced another new addition to its expanding C.B. line—Courier Galaxy V.

The new top of the line Courier Galaxy V was revealed by Murray Trotiner, director of sales & marketing at the 1988 winter consumer electronics show.

Courier Galaxy V is a super performing professional AM/SSB mobile transceiver for personal or commercial two way communications.

Featuring a dual conversion receiver, phase lock loop high tech circuitry providing precision control of 120 channel frequencies (40 AM and 80 upper and lower side band). Courier Galaxy V is designed for the most discriminating C.B. enthusiast.

Its superb adjacent channel rejection, automatic gain control to prevent "overloading" of strong signals, noise blanker/noise limiter for minimizing background noise, all result in outstanding clarity of reception.

Convenience features include day-night channel reading with large easy-to-read digital LED channel indicator plus channel selector dial, channel 9 priority, RF/MIC gain controls, tone, volume/squelch controls, clarifier control, S-RF/SWR meter, SWR calibration control land PA capability. All combined, Courier Galaxy V offers the optimum in superior quality performance and reliability.

Courier Galaxy V is housed in a rugged compact cabinet with an attractive instrument panel with champagne gold and black appointments.

Suggested list price $199.95.

The Courier C.B. line is marketed through C.B. radio distributors, communicatins equipment specialists and electronics distributors. Fanon Courier also manufactures a broad range of communications and commercial sound products, including FM scanning monitor receivers, P.A. amplifier systems, intercoms and megaphones.

For complete information, write Fanon Courier, 14281 Chambers Rd., Tustin, CA 92680 (714) 669-9890, or circle number 104 on your readers service card.

Mercer Electronics Adds Two New Multifunction Frequency Counters

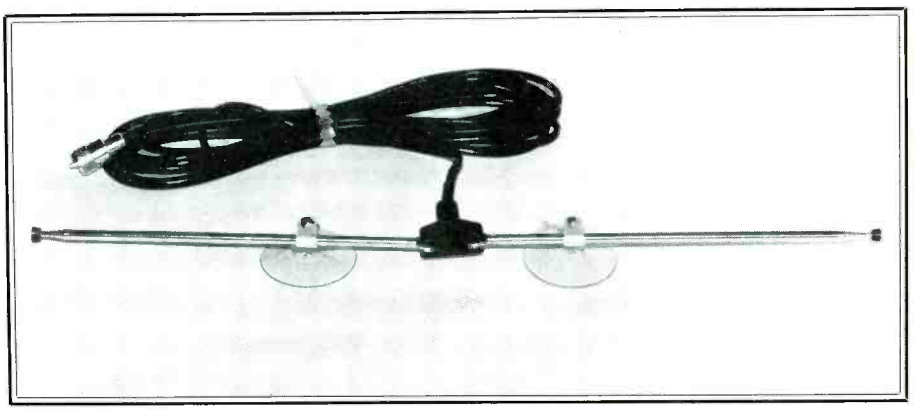
Two new multifunction frequency counters are now being marketed by Mercer Electronics, Division of Simpson Electric Company. The 1 GHz Model 9810 and 100 MHz MOdel 9800 provide a broad spectrum of frequency measurement capability.

The new Models 9810 and 9800 provide period measurement, period average and totalize functions. Both feature a large, 8-digit LED display with annunciators. All inputs and functions are front-panel mounted and clearly marked for ease of use.

The Mercer 9800 counter, with a 10 Hz to 100 MHz range, is ideally suited for general purpose service, lab use, education, audio test, digital and hobby applications. Its period, totalize and period averge functions make it a value-priced instrument for production applications as well. Suggested resale price is $255.00.

The Mercer Model 9810 counter provides an extended range—10 Hz to 1 GHz—to satisfy the product testing and servicing requirements for UHF radio communication systems and cellular UHF phone radio links. Suggested resale price is $475.00.

For complete details and specifications, contact your electronics distributor or Mercer Electronics, 859 Dundee Avenue, Elgin, Illinois 60120-3090; (312) 697-2260; FAX (312) 697-2272, or circle number 102 on our reader service card.



Revolutionary Suction Cup Mounted Antenna!

Electron Processing, Inc., announced a totally new concept in antenna mounting. EPI's VAK-TENNA mounts to glass or any smooth surface with suctions cups to provide a means of mounting an antenna where drilling holes is not possible. The antenna can be installed or removed in minutes without leaving any marks or without tools. Vertical or horizontal configurations can be used as desired.

The unique mount consists of two powerful suction cups capable of holding the antenna firmly for weeks without any loss of strength. The antenna is held 1" from the glass to clear the frames of most windows. In addition, the elements hinge allowing its use with bay windows and at unusual angles.

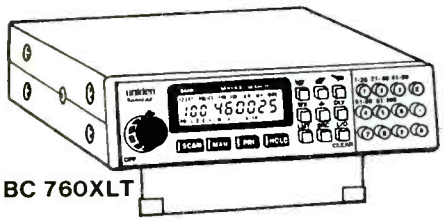
The VAK-TENNA covers 30-500 MHz for receive and from 50-250 MHz for transmission with up to 50 watts. Two telescoping elements extend to a full 79 inches yet collapse to 20 inches and can be folded to 12 inches for storage or transport. A 15 foot 50 ohm RG-58 cable is provided for connection to the radio equipment. Standard connectors are either PL259, BNC, Motorola or F. Other connectors are available on special order. Pricing starts at $29.95 with quantity discounts available. For more details and ordering information, contact the Sales Department, Electron Processing, Inc., at P.O. Box 708, Medford, NY 11763, or circle number 103 on our readers service card. **PC**

uniden®
CB Radios & Scanners

Communications Electronics,™ the world's largest distributor of radio scanners, introduces new models of CB, radar detectors and scanners.

NEW! Bearcat® 760XLT-SA

List price $499.95/**CE price $294.95**
12-Band, 100 Channel • Crystalless • AC/DC
Frequency range: 29-54, 118-174, 406-512, 806-956 MHz. Excludes 823.9875-849.0125 and 868.9875-894.0125 MHz.
The *Bearcat* 760XLT has 100 programmable channels organized as five channel banks for easy use, and 12 bands of coverage including the 800 MHz. band. You also get automatic scanning of preprogrammed aircraft, police, marine, and emergency services. It also includes Weather Search, Priority, Squelch, Lockout and Delay. It has automatic and manual band search to find new active frequencies in other areas of the radio spectrum. The *Bearcat* 760XLT mounts neatly under the dash and connects directly to fuse block or battery. The unit also has an AC adaptor, flip down stand and telescopic antenna for desk top use. 6-5/16" W x 1⅝" H x 7⅜" D. Model **BC 580XLT-SA** is a similar version without the 800 MHz. band for only $219.95.



BC 760XLT

Regency® TS2-SA

List price $499.95/**CE price $309.95/SPECIAL**
12-Band, 75 Channel • Crystalless • AC/DC
Frequency range: 29-54, 118-175, 406-512, 806-950 MHz.
The *Regency* TS2 scanner lets you monitor Military, Space Satellites, Government, Railroad, Justice Department, State Department, Fish & Game, Immigration, Marine, Police and Fire Departments, Aeronautical AM band, Paramedics, Amateur Radio, plus thousands of other radio frequencies most scanners can't pick up. The *Regency* TS2 features new 40 channel per second *Turbo Scan*™ so you wont miss any of the action. Model **TS1-RA** is a 35 channel version of this radio without the 800 MHz. band and costs only $239.95.

Regency® RH256B-SA

List price $799.95/**CE price $329.95/SPECIAL**
16 Channel • 25 Watt Transceiver • Priority
The *Regency* RH256B is a sixteen-channel VHF land mobile transceiver designed to cover any frequency between 150 to 162 MHz. Since this radio is synthesized, no expensive crystals are needed to store up to 16 frequencies without battery backup. All radios come with CTCSS tone and scanning capabilities. A monitor and night/day switch is also standard. This transceiver even has a priority function. The RH256 makes an ideal radio for any police or fire department volunteer because of its low cost and high performance. A *60 Watt* VHF 150-162 MHz. version called the **RH606B-SA** is available for $429.95. A UHF 15 watt, 10 channel version of this radio called the **RU150B-SA** is also available and covers 450-482 MHz. but the cost is $419.95

SALE Bearcat® 100XL-SA

List price $349.95/**CE price $159.95/CLOSEOUT**
9-Band, 16 Channel • Priority • Scan Delay Search • Limit • Hold • Lockout • AC/DC
Frequency range: 30-50, 118-174, 406-512 MHz.
Uniden has authorized CEI to closeout the famous *Bearcat* 100XL to make room for new models. This scanner has a full 16 channels with frequency coverage that includes all public service bands. Wow... what a scanner! Included in our low CE price is a sturdy carrying case, earphone, battery charger/AC adapter, six AA ni-cad batteries and flexible antenna. Since this is a special closeout price on our last 200 pieces, you must order your *Bearcat* today to take advantage of this excellent scanner opportunity.

★★★ Uniden CB Radios ★★★

The *Uniden* line of Citizens Band Radio transceivers is styled to compliment other mobile audio equipment. Uniden CB radios are so reliable that they have a two year limited warranty. From the feature packed PRO 540e to the 310e handheld, there is no better Citizens Band radio of the market today.

PRO310E-SA *Uniden* 40 Ch. Portable/Mobile CB . . . $85.95
PRO330E-SA *Uniden* 40 Ch. Remote mount CB . . . $109.95
NINJA-SA PRO310E with rechargeable battery pack. $99.95
B-10-SA 1.2V AA Ni-cad batt. for Ninja (set of 10) $20.95
KARATE-SA *Uniden* 40 channel rescue radio $69.95
PRO520E-SA *Uniden* 40 channel CB Mobile $59.95
PRO540E-SA *Uniden* 40 channel CB Mobile $119.95
PRO640E-SA *Uniden* 40 channel SSB CB mobile . . . $159.95
PRO710E-SA *Uniden* 40 channel CB Base. $119.95
PRO810E-SA *Uniden* 40 channel SSB CB Base. . . . $179.95

★★★ Uniden Radar Detectors ★★★

Buy the finest *Uniden* radar detectors from CEI today.
RD7-SA *Uniden* visor mount radar detector $109.95
RD9-SA *Uniden* "Passport" size radar detector . . . $129.95
RD9XL-SA *Uniden* "micro" size radar detector . . . $159.95
RD25-SA *Uniden* visor mount radar detector $59.95
RD500-SA Uniden visor mount radar detector $79.95

NEW! Bearcat® 200XLT-SA

New Product...Available May, 1988
List price $509.95/**CE price $299.95**
12-Band, 200 Channel • 800 MHz. Handheld Search • Limit • Hold • Priority • Lockout
Frequency range: 29-54, 118-174, 406-512, 806-956 MHz. Excludes 823.9875-849.0125 and 868.9875-894.0125 MHz.
The *Bearcat* 200XLT sets a new standard for handheld scanners in performance and dependability. This full featured unit has 200 programmable channels with 20 scanning banks and 12 band coverage. If you want a very similar model without the 800 MHz. band and 100 channels, order the **BC 100XLT-SA** for only $219.95. Includes antenna, carrying case with belt loop, ni-cad battery pack, AC adapter and earphone. Order your scanner now.

Bearcat® 800XLT-SA

List price $499.95/**CE price $259.95/SPECIAL**
12-Band, 40 Channel • No-crystal scanner Priority control • Search/Scan • AC/DC
Bands: 29-54, 118-174, 406-512, 806-912 MHz.
The Uniden 800XLT receives 40 channels in two banks. Scans 15 channels per second. Size 9¼" x 4½" x 12½." If you do not need the 800 MHz. band, a similar model called the **BC 210XLT-SA** is available for $196.95.

Bearcat® 145XL-SA

List price $189.95/**CE price $98.95/SPECIAL**
10-Band, 16 Channel • No-crystal scanner Priority control • Weather search • AC/DC
Bands: 29-54, 136-174, 406-512 MHz.
The *Bearcat* 145XL is a 16 channel, programmable scanner covering ten frequency bands. The unit features a built-in delay function that adds a three second delay on all channels to prevent missed transmissions.

Bearcat® 175XL-SA

List price $279.95/**CE price $156.95/SPECIAL**
11-Band, 16 Channel • Weather Search Priority control • Search/Scan • AC/DC
Bands: 29-54, 118-174, 406-512 MHz.
The *Bearcat* 175XL has an automatic search feature to locate new frequencies. Priority, lock out, delay and scan speed are all included.

Regency® Informant™ Scanners

Frequency coverage: 35-54, 136-174 406-512 MHz.
The new *Regency* Informant scanners cover virtually all the standard police, fire, emergency and weather frequencies. These special scanners are preprogrammed by state in the units memory. Just pick a state and a category. The Informant does the rest. All Informant radios have a feature called *Turbo Scan*™ to scan up to 40 channels per second. The **INF1-SA** is ideal for truckers and is only $199.95. The new **INF2-SA** is a deluxe model and has ham radio, a weather alert and other exciting features built in for only $239.95. For base station use, the **INF5-SA** is only $149.95 and for those who can afford the best, the **INF3-SA** at $209.95, is a state-of-the-art, receiver that spells out what service you're listining to such as Military, Airphone, Paging, State Police, Coast Guard or Press.

Regency® HX1500-SA

List price $369.95/**CE price $179.95/SPECIAL**
11-Band, 55 Channel • Handheld/Portable Search • Lockout • Priority • Bank Select Sidelit liquid crystal display • EAROM Memory Direct Channel Access Feature • Scan delay
Bands: 29-54, 118-136, 144-174, 406-420, 440-512 MHz.
The new handheld *Regency* HX1500 scanner is fully keyboard programmable for the ultimate in versatility. You can scan up to 55 channels at the same time including the AM aircraft band. The LCD display is even sidelit for night use. Includes belt clip, flexible antenna and earphone. Operates on 8 1.2 Volt rechargeable Ni-cad batteries (not included). Be sure to order batteries and battery charger from the accessory list in this ad.

★★★ Uniden Cordless Phones ★★★

A major consumer magazine did a comparison study on cordless phones. The check points included clarity, efficiency and price. *Uniden* was rated best buy.

XE300-SA *Uniden* Cordless Phone $69.95
XE500-SA *Uniden* Cordless Phone with paging. . . . $84.95
XE700-SA *Uniden* Cordless Phone with speaker . . . $114.95

★★★ Extended Warranty Program ★★★

If you purchase a scanner, CB, radar detector or cordless phone from any store in the U.S. or Canada within the last 30 days, you can get up to three years of extended warranty service from Warrantech. This service extension plan begins *after* the manufacturer's warranty expires. Warrantech will perform all necessary labor and will not charge for return shipping. Extended warranties are non-refundable and apply only to the original purchaser. A two year extended warranty on a mobile or base scanner is $29.99 and three years is $39.99. For handheld scanners, 2 years is $59.95 and 3 years is $79.95. For radar detectors, two years is $29.95. For CB radios, 2 years is $39.99. For cordless phones, 3 years is $34.99. Order your warranty for your merchandise today.

OTHER RADIOS AND ACCESSORIES

NEW! **BC 55XL-SA** *Bearcat* 10 channel scanner. . . $114.95
BC 70XLT-SA *Bearcat* 20 channel scanner $169.95
R1090-SA *Regency* 45 ch. scanner . . . **CLOSEOUT** $119.95
Z60-SA *Regency* 60 ch. scanner . . . **CLOSEOUT** $129.95
UC102-SA *Regency* VHF 2 ch. 1 Watt transceiver . . . $117.95
BPS5-SA *Regency* 16 amp reg. power supply $169.95
MA549-SA Drop-in charger for HX1200 & HX1500 . . . $84.95
MA518-SA Wall charger for HX1500 scanner $14.95
MA553-SA Carrying case for HX1500 scanner $19.95
MA257-SA Cigarette lighter cord for HX12/1500 . . . $19.95
MA917-SA Ni-Cad battery pack for HX1000/1200 . . . $34.95
BP205 Ni-Cad battery pack for BC200/BC100XLT. . . $49.95
B-8-SA 1.2 V AA Ni-Cad batteries (set of eight) $17.95
FB-E-SA Frequency Directory for Eastern U.S.A. . . . $14.95
FB-W-SA Frequency Directory for Western U.S.A. . . . $14.95
ASD-SA Air Scan Directory $14.95
SRF-SA Survival Radio Frequency Directory $14.95
TSG-SA "Top Secret" Registry of U.S. Govt. Freq. . . . $14.95
TIC-SA Techniques for Intercepting Comm. $14.95
RRF-SA Railroad frequency directory $14.95
EEC-SA Embassy & Espionage Communications . . . $14.95
CIE-SA Covert Intelligence, Elect. Eavesdropping . . . $14.95
MFF-SA Midwest Federal Frequency directory $14.95
A60-SA Magnet mount mobile scanner antenna . . . $35.95
A70-SA Base station scanner antenna. $35.95
USAMM-SA Mag mount VHF ant. w/ 12' cable. $39.95
USAK-SA ¾" hole mount VHF ant. w/ 17' cable. . . . $35.95
USAK450-SA ¾" hole mount UHF ant. w/ 17' cable. . . $35.95
Add $3.00 shipping for all *accessories* ordered at the same time.
Add $7.00 shipping per radio and $3.00 per antenna.

BUY WITH CONFIDENCE

To ***get the fastest delivery from CE*** of any scanner, send or phone your order directly to our Scanner Distribution Center.™ Michigan residents please add 4% sales tax or supply your tax I.D. number. Written purchase orders are accepted from approved government agencies and most well rated firms at a 10% surcharge for net 10 billing. All sales are subject to availability, acceptance and verification. All sales on accessories are final. Prices, terms and specifications are subject to change without notice. All prices are in U.S. dollars. Out of stock items will be placed on backorder automatically unless CE is instructed differently. A $5.00 additional handling fee will be charged for all orders with a merchandise total under $50.00. Shipments are F.O.B. Ann Arbor, Michigan. No COD's. Most products that we sell have a manufacturer's warranty. Free copies of warranties on these products are available prior to purchase by writing to CE. Non-certified checks require bank clearance. Not responsible for typographical errors.

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SATELLITE VIEW

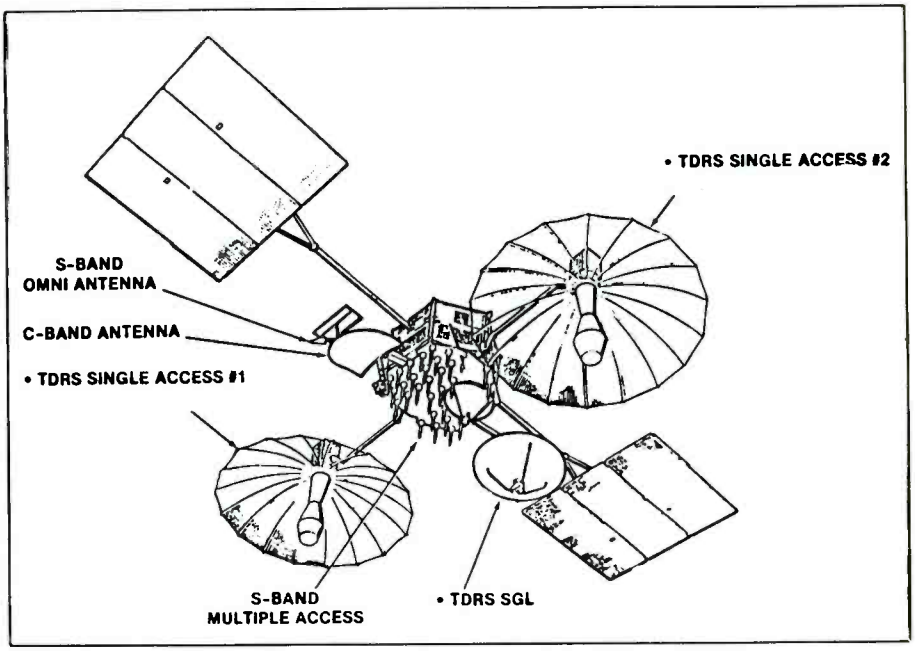
BY DONALD DICKERSON, N9CUE

INSIDE THE WORLD OF SATELLITE COMMUNICATIONS

Technical Data Relay Satellites

With the loss of the Challenger and it's crew, NASA also lost a TDRS (Technical Data Relay Satellite) satellite. It was the second in a planned network of six geo-stationary satelites which, when completed, will replace NASA's worldwide network of ground stations. These stations have been used since the early days of the space program to track and maintain communications with our manner spacecraft. Seven ground stations in this network of twelve will be closed. The tracking stations in Madrid Spain, Canberra, Australia, and Gladstone, California will be transfered to the Jet Propulsion Laboratory's Deep Space Network centered in Pasadena. Goddard Spaceflight Center in Maryland, and a new facility at White Sands, New Mexico, will be the only two stations required to operate the TDRS system. These two stations will be responsible for routing communications to other facilities as needed.

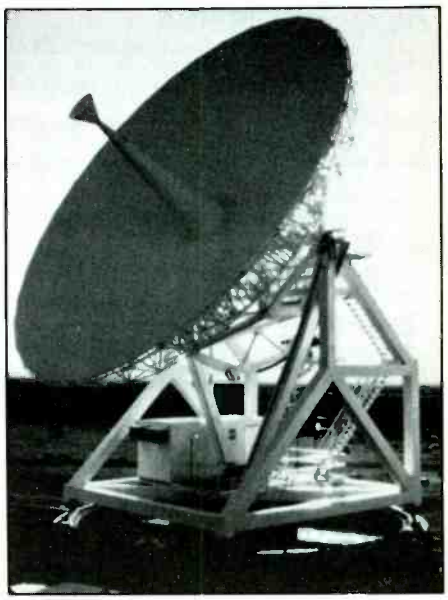
Though NASA will control the TDRS satellites, they will do much more than relay voice and data communications from the space shuttle, which is their official description. TDRS is part of our spy satellite system operated by the NRO (National Reconnaissance Office.) It may seem a little odd that a civilian space agency like NASA would be working so closely with the military in spy satellite operations. But what is not often realized, is that the Air Force has always played a much greater role in the control of NASA, than is generally understood. NASA is more of a partnership with the military than a true civilian agency. TDRS will be crosslinked with a variety of military communications and spy satellites, including the SDS (Satellite Data System), KH-11 and 12's and other SigInt and Elint platforms. Crosslinking satellites can simplify routing and keeps data from our spacecraft secure from intercept. This routing method is also used to handle intercepts from our spy satellites to our ground stations. TDRS will also handle data from the Landsat, Spacelab (and the Starhab SDI program), Solar and communications satellites and the Hubble Space telescope. Each TDRS can support 23 other spacecraft at a time. Three ground stations outside the US, one in Samoa, Australia, and the Ascension Island, will receive TDRS downlink relays from spy satellites and route them to the proper facilities.



The fully deployed TDRS measures 42 by 57 feet (NASA).

Mechanics

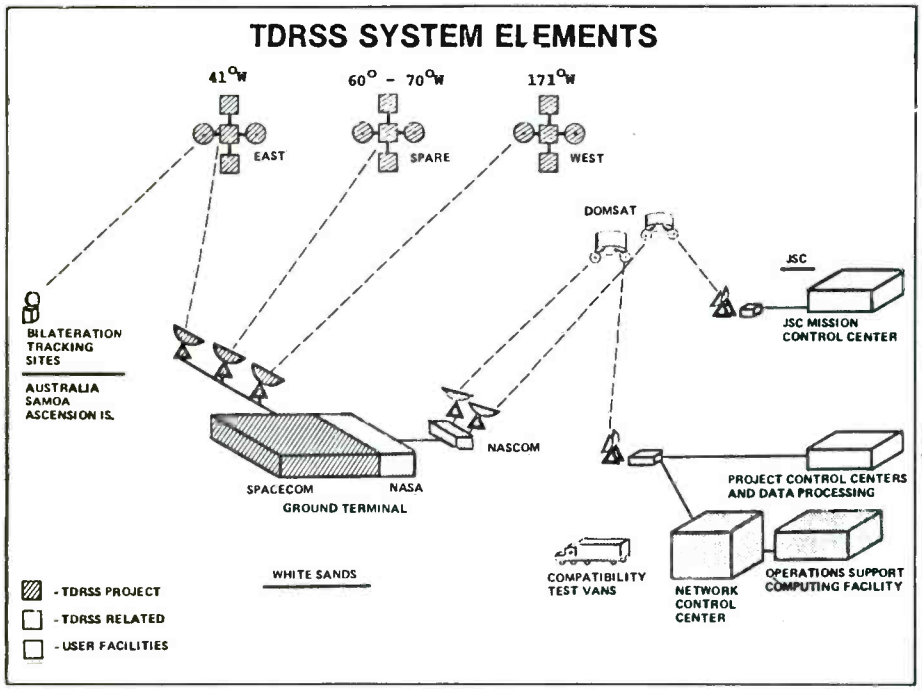
The first TDRS was launched in April of 1983 on the maiden flight of Challenger. Due to a failure in the IUS (Inertial Upper Stage), it took ground stations two months to maneuver the satellite into a usable orbit. It is not located at 41 degrees west longitude, in a geo-stationary orbit. The ISU is a 17 foot long, 9 foot in diameter solid fuel rocket weighing 32,000 lbs. TDRS is strapped to the top of this rocket before it is placed into the Shuttle's cargo bay. Since the Shuttle maintains a LEO (Low Earth Orbit) of under 275 miles during a normal mission, an ISU is required to place all high and geo-stationary satellites in orbit. After the satellite is released from the cargo bay, it is allowed to drift for an hour before the first stage rocket is ignited. This gives the Shuttle time to distance itself from the satellite/ISU package in case the booster fails or explodes. The first stage of the ISU makes a 2½ minute burn. Six hours later, as the satellite nears geo-stationary orbit, the second stage burns for an additional minute and 45 seconds, placing the satellite into it's desired location.



The Spacecraft

The TDRS satellites are some of the largest in orbit. Each satellite spans more than 57 feet measured across it's solar panels. Each satellite carries seven antenna, two gold plates (yes, 14K gold) dish antennas, each measuring 16 feet in diameter. When both are deployed, the spacecraft widens to 42 feet. Other antennas include a twenty eight element S-band antenna, a single S-band omni and two C-band and a Ku-band antenna.

The spacecraft is built by TRW, and the ground station equipment is supplied by Harris Communications, who own the satellites and lease them to NASA on ten year contracts.



"Control of TDRS is maintained by ground station antennas with a beamwidth of .08 degrees on a frequency of 15 GHz." (NASA).

Under the current system of ground stations communications, the Goddard Spaceflight Center controls NASA spacecraft during only 20% of each orbit. Each ground station picks-up a portion of each orbit. When the TDRS system is fully operational, Goddard will have full control and contact with all spacecraft for up to 85% of each orbit, depending on the type of orbit.

Data from the TDRS and other user satellites will be routed through the new White Sands, NM facility. Oddly enough, NASA again has leased commercial satellites for relay of both voice and video signals (now we are talking about NASA Shuttle communications only) to user terminals. This includes Johnson Space Center, who receives relays of Shuttle communications through SatCom 2R. If you are equipped with TVRO you can intercept any unencrypted transmissions to Johnson Space Center.

Conclusions

When the Space Shuttle resumes it's schedule, hopefully soon, the first few flights will be dedicated to high priority launches. This will include the launch of two spy satellites and two TDRS satellites. The TDRS will be placed at 65 degrees and 171 degrees West, respectively. If the Shuttle does not fly againuntil 1989, depending on the number of delays, TDRS might not be launched until late in the year, they will still have launch priority.

The Soviet's have also begun to place TDRS style satellites into geo-orbit in order to provide continuous communications with their Mir Space Complex. Their satellites are known as ESDRN (Eastern Satellite Data Relay Network). These are Luch transponders carried on host satellites, the Raduga and Gorizont telecommunication satellites. The Soviet's could have their network of satellites in place before we are able to launch all of our TDRS. Not only that, but if delays in our program continue, the Soviets could surprise us with a launch of their Shuttle before we are able to launch our own. They have already successfully tested the launch vehicle for their shuttle. It is believed that only minor computer problems are holding up the launch of their shuttle, the USSR will also be sending three probes to Mars during the next two years. It has been eleven years since the US launched its last planetary probe. Perhaps some of the money that is being spent on SDI would be better spent on conventional NASA programs.

TDRS Frequency bands

S-band	1.5 to 5.2 GHz
C-band	3.9 to 6.2 GHz
Ku-band	10.9 to 11.2 GHz
	11.4 to 11.7 GHz
K-band	15.0 to 15.5 GHZ (TLM)

TDRS Shuttle Frequencies

FM primary	2.205 GHz downlink
FM secondary	2.250 GHz downlink
PM primary	2.217 GHz downlink
PM secondary	2.287 GHz downlink

NASA's domestic relay

Satcom F2R 3.960 GHz downlink (channel 13)

TDRS LAUNCH SCHEDULE

Date	Satellite	Shuttle/ELV
2-6-88	TDRS C	STS-26 Discovery
2-89	TDRS D	STS-29 Discovery
8-90	TDRS E	STS-42 Atlantis
8-91	TDRS F	Titan III
12-91	TDRS G (Spare)	N/A
11-91	TDRS H (Spare)	N/A

PC

THE HAM COLUMN

GETTING STARTED AS A RADIO AMATEUR

DAVE NEWKIRK, AK7M
AMERICAN RADIO RELAY LEAGUE HQ

DX for Novices and Technicians: A Whole New Ball Game

Earlier in the century, radio took the world by storm for just one reason: It's *the* way to link here with there instantaneously, without wires. Since then, we've found additional uses for radio that don't have anything to do with interconnecting points in space—cooking food, detecting intruders, driving oil out of shale and sensing the presence of metal, for instance. Still, radio remains unchallenged in the conquest of distance and time.

Radio's ability to conquer distance was barely exploited at first because of primitive equipment and the newness of the radio technique. Antenna resonance was barely understood. A transmitting station consisted of little more than an electric noise generator, fed into a mass of wire, hung as high as possible in the air. At the receiving end, a similar antenna provided signals to a passive detector. On December 6, 1901, Marconi used such a system to transmit the Morse letter *S* from Poldhu, Cornwall, England, to St. John's, Newfoundland—2000-mile DX!

There's that magic word: *DX*. It was just the wireless abbreviation for *distance* back when Amateur Radio was young—when DX for a kilowatt amateur spark rig was, with luck, a few hundred miles. For communication over longer distances, hams relied on other ham relay stations to get messages through. (The American Radio Relay League, founded in 1914, began as an organization of relay-minded radio amateurs.) Better receivers and antennas, and the advent of CW, pushed the distance limit for two-way work out to 1000 miles on occasion. But worldwide ham DX was still a dream.

We're not talking about the short waves—yet. North American amateur stations—some spark, some CW—were heard in England for the first time in December, 1921. Most of them operated at wavelengths around 200 meters (1500 kHz). During 1922 trials, the Americans "got across" again, and British signals were heard in North America. By late 1923, North American hams were being heard across the Atlantic *and* Pacific on 200 meters. But two questions remained: Who would be first to complete a *two*-way transoceanic contact, and when?

On November 26, 1923, Charles York, U7HG, of Tacoma, Washington, worked station JUPU, the American operator of which claimed his location as Tokyo, Japan—4650 miles from Tacoma! The operator gave York a message for his mother in Cambridge, Illinois, before interference broke up their 200-meter contact. Tantalizingly, that's all we know about JUPU to this day. Other operators later reported hearing the station, but no further contacts were reported with JUPU. Did York *really* work Japan? We'll likely never know. The first transpacific ham contact remains shrouded in mystery.

Just under 48 hours later, however, the first trans*atlantic* Amateur Radio contact became a sure thing. On the night of November 27, Leon Deloy, 8AB, France, called America on schedule, sent two messages "blind" and stood by for an acknowledgement. Fred Schnell, at station 1MO, heard 8AB get through! So did John Reinartz, 1XAM. Both stations were in Connecticut. The two Americans had gotten special permission to use 100 meters (3 MHz) even though common sense said that such a short wavelength was useless. The gamble paid

Modern ham DXcitement stems more from the rarity of the DX station—or the country it represents—than the distance spanned by the contact. According to a recent countries-needed survey by The DX Bulletin, *this QSL card confirms a contact with* the rarest country in the world: *Albania.*

off. Now, *DX* meant *real* DX! Those short waves weren't so useless after all!

Ham exploration of the short-wave frontier was the beginning of the end for spark. In July 1924, the Department of Commerce authorized the issuance of licenses for new *CW-only* amateur bands near 80, 40, 20 and 5 meters. By early January 1925, 40 meters had proven itself a superb nighttime DX band; on January 22, 1XAM worked Edward N. Willis, 6TS, California, at *11:30 AM*, Eastern Time. *Daylight* DX had made the scene.

DX Today

Over sixty years later, the lure of DX is as strong as ever. Today's radio amateurs have more bands, better antennas, and better transmitting and receiving equipment than the DX pioneers of the 1920's. Modern hams are talking through satellites and using home computers to forecast propagation. They're even bouncing signals off the moon.

Some of Amateur Radio's most sought after awards—the International Amateur Radio Union's Worked All Continents, ARRL's DX Century Club, and *CQ*'s Worked All Zones awards—await the determined DX'er. Every spring brings another ARRL International DX Contest; the *CQ* Worldwide DX Contest runs in the fall. Regional DX contests occur throughout the year.

There's mass-media support for DX'ing, too. The major ham magazines publish DX columns and propagation charts each month. ARRL's Maxim Memorial Station, W1AW, transmits weekly DX news and propagation bulletins. DX clubs, nets, conventions and newsletters abound.

Now that Novice and Technician-class hams can transmit SSB voice at 28.3-28.5 MHz, they can get in on more DX action than ever before. Who'll be first to qualify for *CQ*'s Worked Novice Zones award on SSB? (Details in the December 1987 Ham Column.) And how about joining the DX Century Club? You must confirm contacts with at least 100 different countries to qualify. The handful of novices who've made DXCC so far did it with *CW only*, mainly on 15 meters (21.1-21.2 MHz). With 10-meter SSB available to novices and Techs, DX is a whole new ball game for beginning hams.

Remember last summer's fantastic 10-meter conditions? (See the report in last December's Ham Column.) The cause—sporadic-E propagation—happens *every* summer, and another summer is just around the corner! PC

ON THE LINE

NEW AND EXCITING TELEPHONE TECHNOLOGY

BY JULIAN MACASSEY, N6ARE

A "Telephone Network" Is Not A List of Useful Phone Numbers

The magical thing about telephones is not the phone bill—that is merely shocking. The magic is that a device using only two wires provides full duplex communications. As anyone who has ever listened to, or used CB, two-way, or ham radio knows, most radio communication is simplex. Simplex means you have to say "over" or "go ahead" when you want the other party to say something. This means only one person talks at a time, no interrupting allowed. The button on the microphone called the "Push To Talk" switch or monopoly switch controls this. In a live conversation both parties can talk at once. If both parties can talk at once, this is called duplex. Duplex is rarely used in radio because it requires two frequencies. Cellular phones are duplex, some ship-to-shore frequencies are. Radios capable of duplex operation are more complex, and therefore, more expensive. Also, duplex radios use twice the spectrum. Frequency assignments are hard to get from the FCC, even if they are free. All telephones are duplex, blazing arguments are possible, and frequent, on phones. Conferences, where up to several hundred people at once can all hear and chime in at any time are possible. Duplex operation is just like live speech face to face.

The device inside every phone that does this trick is called the "Network" hybrid, or two/wire four/wire network. It takes a two wire telephone line and converts it to a four wire device, two wires for the transmitter, or microphone, and two wires for the receiver, or earpiece. It also usually provides connections and an interface for dials, ringers, hookswitches and some accessories.

In the last five years, more and more phones have been built with IC hybrids replacing the standard coil, and capacitor hybrid. Some phones are built with discrete transistors. Most of these "electronic" phones use electret transmitters (microphones). Some European electronic phones use dynamic transmitters, identical to the microphones used in CB and two way radios. Many of the earlier electronic phones did not work well on the phone line. If an extension was taken off the hook, the electronic phone often went dead. Modern Hybrid IC's, such as those made by Motorola and AT&T, will work down to one Volt, this means they will work on any standard phone line with up to three extensions off-hook.

Although the IC manufacturers are now

425 TYPE TELEPHONE NETWORK PARTS LIST

Resistors

R1 180 to 220 Ohms 5% 0.5 Watts Carbon composition
R2 68 to 120 Ohms 5% 0.5 Watts Carbon Composition
R3 22 Ohms 5% 0.5 Watts Carbon compostion

Capacitors

C1 0.1 to 0.14 uF 250V Mylar
C2 0.4 to 0.48 uF 250V Mylar
C3 1.5 to 2.5 uF 250V Mylar

Varistors

VR1 Silicon carbide (BLACK)
VR2 Silicon carbide (ORANGE)

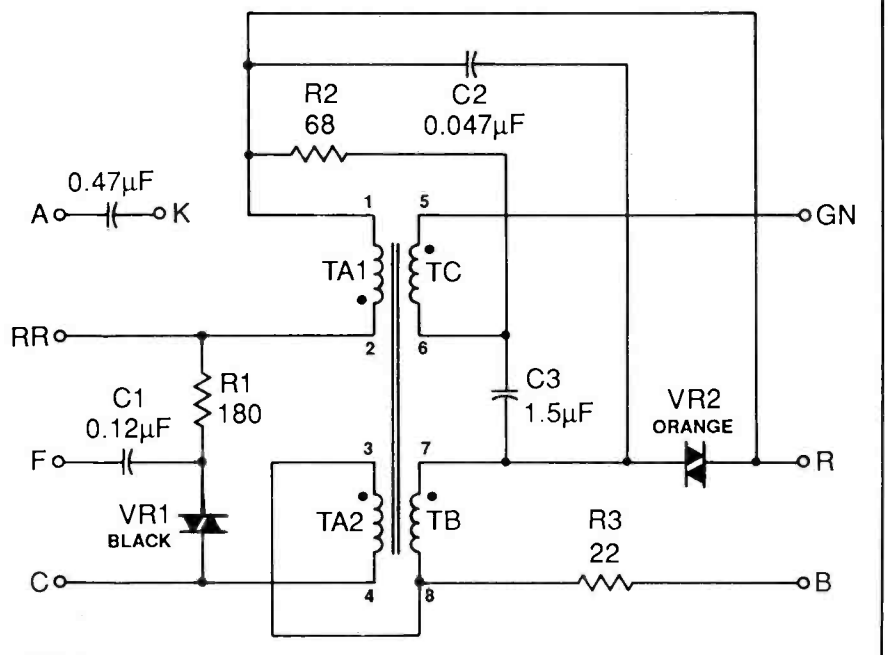
Inductors

L1 HYBRID TRANSFORMER

Explanation Of Telephone Hybrid Terminals

A One side of ringer isolating capacitor
B To transmitter in handset
C Line in via hookswitch
F To spark suppression capacitor used with rotary dial.
G Tie point, usually for ground (yellow wire) and sometimes the ringer.
GN To receiver in handset
K One side of ringer isolating capacitor
L1 Tie point, line in and hookswitch
L2 Tie point, line in and hookswitch
R Common tie point to handset both receiver and transmitter
RR Line in via hookswitch
S Tie point, used with touch tone pads.
T Tie point, used with touch tone pads.

Figure 1



NOTE:
Tie point terminals not connected to hybrid:
G, L1, L2 S, T.

Figure 2

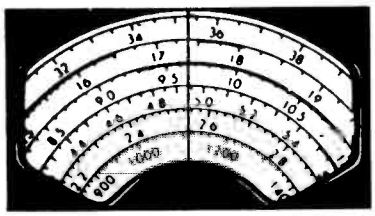
making IC's that are cost competitive, and provide comparable performance to the standard hybrid, they are still not as rugged as the L/C network. When using semiconductors in a phone, steps must be taken to protect the IC and transistors from the voltage transients on the phone line. This extra protection costs money, often negating the savings from using an IC as the network.

In the US, almost every telephone built since the early 1950's uses the same type of network. This is known to AT&T as the 425 network. In AT&T phones, it is in a tin can inside the phone. Other manufacturers such as Comdial, ITT and Automatic Electric usually use a regular PC board. The components used by all these manufacturers are about the same (see Fig 1.) Also, they all use the same nomenclature for the connection points on the network. They may use different color wires for dials and hookswitches, but the network terminal letters remain the same. The connection points on a network can be screw terminals,or special receptacles for spade lugs called "Spanish Clips." These terminals are called Spanish Clips because they were first used in Spanish telephones. These are push in clips and are easy to use, but, one Spanish Clip can accept only two spade lugs. You can pile four or five spade lugs under a screw terminal. The standard 425 type network found in standard desk, wall, trimline, and business phones can be seen schematically in Figure 2.

Telephone users may, or may not, have noticed that they can hear what they are saying in the receiver. When a caller can not hear his voice coming out of the earpiece, the assumption is that the phone is dead. This controlled leakage is referred to as "Sidetone." The level of sidetone supplied is important. Too little, and callers tend to shout. Too much, and they speak too softly. None at all, and they hang up because "the line is dead!" The sidetone is controlled by components VR2, C2 and R2. If R2 is replaced by a potentiometer, the sidetone can be effectively nulled.

The other Varistor, VR1 in combination with R1, works as "Loop Compensation." This part of the circuit works to maintain the same volume level in the receiver no matter how much current is flowing in the phone line. It can be considered as an "Automatic Volume Control." In telephone parlance, the line is called the loop. It is, after all, a loop of wire with the subscriber's phone at one end, and the telephone Central Office at the other. Without loop compensation, phones that are on a "short loop" or near the Central Office would be far too loud.

The telephone hybrid is a simple device of few parts that does an amazing job. It is a rugged device, there is nothing to burn out, blow out, or wear out. The mechanical parts of a telephone, such as the dial and hookswitch may wear out. Static discharges are still the enemy of electronic phones. But if you want to put a 425 type hybrid out of action, you have to hit it with a large hammer.



COMMUNICATIONS CONFIDENTIAL

BY DON SCHIMMEL

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

Frequent contributor, Steve McDonald of British Columbia, always sends in interesting material and this month he provided a list of CW loggings he compiled from monitoring the 400-500 kHz range. (See Table II). Steve used a ICOM R-71A and a homebrew 5' AZ-EL tuned loop.

Another frequency contributor to the column is David Alpert, NY who has as his monitoring equipment an ICOM R-71A, Drake SPR-4 and a Sony ICF-2010.

In responding to some questions raised by Wayne Drexler, NE I find I am unable to give a definitive answer because my references disagree on some VHF Maritime Channels/Frequencies. Also, the subject frequencies are not within the "Communications Confidential" range so I have therefore passed the request on to Chuck Gysi, Editor of the "Scanner Scene' column.

A frequent question in recent weeks has been "What is SELCAL?" This is the abbreviation for "Selective Call' which is the paging system used on HF to idnicate to a particular aircraft that a ground station wants to make contact with it. Each HF radio aboard the plane has a four-letter code and when the ground station has transmitted the code signal, the on-board system gives both an audio and visual indication thus alerting flight deck personnel to answer the call.

It is not possible to present all of the latest batch of QSL's from Patrick O'Connor, NH but I do want to mention some he sent in. AAF, USAF Ascension Island; AFE8, MacDill AFB, Florida; AFG37, Scott AFB, IL; AFI, McClellan AFB, CA; AFL, Loring AFB, ME; AGA, Hickam AFB, HI; AJO, USAF Incirlik, Turkey; and AKA, Elmendorf AFB, Alaska.

David Kammler indicated he will be sending in some loggings soon, and for monitoring he uses an ICOM R-71, Sony ICF 7600D, and a Realistic DX-66 Air/SW monitor. He has three longwire antennas at various elevations and of various lengths. He also has an Apple IIc computer.

From Lee Banner, NY we learn "I have been listening on and off to SW since 1957. First, on an old RCA Victor floor model belonging to my Dad, and then on my own Hallicrafters with rabbit ears. I'm now using a Sony 2010 with an Eavesdropper Two and a longwire. I enjoy most of all listening

HMNZS Irirangi
Waiouru
New Zealand
7/9/87

Hugh M. Hawkins (WDX53AT)

United States of America

Dear Sir,

With regard to your letter dated 29 April 87 We thankyou for your interest and confirm that the transmission you received is radiated from this station, Navcommsta Waiouru, ZLO/ZLP.

The subject message is continually emitted on various H.F. frequencies, using a CTH 7 transmitter with a power output of 5-10 kilowatts coupled with a quadrant antenna, in position 39·32 South 175·40 East.

Once again we express our thanks and wish you interference free reception in the future

Yours sincerely

D.A. EARL (Chief Petty Officer)

NAVAL COMMUNICATIONS STATION
08 SEP 1987
WAIOURU

Hugh Hawkins, TX shares with POP'COMM readers this QSL he received from New Zealand.

BSF
中華民國標準頻時廣播電臺

Frequency: 5MHz, 15MHz
Date: Sep. 20, 1985
No.: 794

Dear Mr. K. Rath:

This is to verify that your reception report on 15 MHz from 08:57 to 09:04 GMT on Aug. 18, 1985 corresponded with our station log of the same day. Thank you for your interest. Further reports are welcome.

Standard Frequency and Time Broadcasting Station
Telecommunication Laboratories
Ministry of Communications
P. O. Box 71, Chung-Li
Taiwan, Republic of China

Here's a QSL from ROC Time and Frequency station BSF sent in by K. Rath, MD.

This confirms reception by WALTER WITKOWSKI (name)
of Station
GANDER INTL. FLT. SERVICE STN. (station name) GANDER, NFLD, CANADA (location)
Call Letters _____ Frequency 3.485 kHz
Antenna VERTICAL Mode BSB
Date FEB 22/87 Time 0425 GMT
Output power 5 KW

(signature)

GANDER INTERNATIONAL FLIGHT SERVICE STATION
TRANSPORT CANADA
BOX 400
GANDER, NEWFOUNDLAND
A1V 1W8

Agency Stamp

Gander International Flight Service station communication confirmed reception by Walter Witkowski, NY.

INTERNATIONAL TRANSMITTING STATION — INTERNASIONALE SENDSTASIE

OLIFANTSFONTEIN (ZUD)

Republic of South Africa / Republiek van Suid-Afrika

Confirmation of Transmission / Bevestiging van Uitsending

Date/Datum 1987-07-25 Time/Tyd 06½10 / 06½25 GMT

Frequency/Frekwensie 10 MHZ

Modulation/Modulasie A3E

Power/Krag 4 KW

Antenna/Antenne 10 MHZ QUAD.

Remarks/Opmerkings: THE 10 MHZ TIMESIGNAL WAS ACTUALLY A TEST X-MISSION FROM 1987-06-16 TO 1987-09-06 THANK YOU VERY MUCH FOR REPORT. BEST WISHES

South African statin ZUD QSL'd for Jerry Rappel, IA.

TABLE I

kHz	ID	TIME	LOCATION
198	DIW	0653	Dixon, NC
244	GNI	0335	Grand Isle, LA
278	NM	0404	Matagami, PQ
302	EAG	0625	Eagle Grove, IA. Radio Beacon Handbook erroneously lists this one in Missouri.
310	H	0734	Egmont Key Lighthouse, FL
314	YN	0739	Swift Current, SK
326	PLK	0607	Point Lookout, MO
339	MKR	0545	Glasgow, MT
341	MYZ	0314	Marysville, KS
350	NY	0824	Enderby, BC
391	DDP	0225	San Juan, PR under strong local beacon MFI
401	YWN	0849	Winisk, ON
416	LB	0245	North Platte, NE
423	SIF	0453	Rockingham County, NC
426	IZS	0309	Montezuma, GA
521	GF	0325	Cleveland, OH

U.S. Department of Transportation
United States Coast Guard

Commanding Officer
Communication Station
"NMR"

P.O.Box S-2029
La Puntilla Final
San Juan, PR 00903

2000
16 October 1987

Mr. R. C. Watts

Dear Sir:

This is to confirm your reception of Coast Guard Communications Station San Juan "NMR" transmissions on 2182/2670 Khz. The signal you heard was from a Sunair GSB900 100 watt transceiver with a linear amplifier which produces 1 kw of power. The antenna utilized is an 80 foot verticle whip.

Although our station is located in the city of San Juan, Puerto Rico (18.28N 66.07W) our transmitters are located in a variety of locations around the island. The transmitter you were receiving is located at Cape San Juan approximately 40 miles from San Juan.

Our mission is to be on the alert for distress (we also guard 500 Khz) and render assistance as required. We accept traffic from vessels of any country in the world free of charge, with traffic addressed to the U. S. Government. The majority of our traffic is in support of the International Automated Mutual Assistance System (AMVER) and relays of coded weather information to the U. S. Weather Bureau from ships at sea including the Pacific and Indian Oceans.

In closing, I would like to wish you continued success with your hobby and in answer to your question, all persons were rescued within a very short time with no loss of life.

P.C.HOPKINSON
Chief Warrant Officer
U. S. Coast Guard
Commanding Officer

R.C. Watts, KY received this letter QSL from the USCG in San Juan, PR. The logging pertained to the sinking of the vessel "Johnny Peterson." Five people adrift on a life raft were subsequently rescued.

to Cruise Ships, Coast Guard, and SAC Quebec frequency."

In just a few weeks, Gordon Miller, WI logged more than 200 Beacon stations. He picked out what he considered to be his best loggings and they are shown in Table I. Gordon uses an ICOM R71-A and a 90 foot longwire.

First-time contributor William Jarrett, TN write, "Recently I sent a report to VOA for two receptions made on 10869 kHz LSB and 11090 kHz USB. I inquired if these might be feeder transmissions, since they were in SSB, and neither frequency was listed in the current issue of WRTH. VOA replied that they could not verify either report, stating that as far as they knew, these were not federal frequencies." William, I guess this is a case of the right hand of VOA not being aware of the left hand. My references show that 10869 kHz LSB is indeed a VOA feeder of 40 KW and located at Bethany, OH. I do not have 11090 kHz listed, but this frequency may have been added after my refs were published.

I am surprised to hear that Civil Air Patrol units don't return many prepared QSL's. According to R.C. Watts, KY, "I tried IN, AR, ID, WI, SD and OH. Received a return from OH." True, that's not a very good return rate.

Another contributor, Joe Lesesne, of PA writes, "This is my first time logging "utes" as I am new to the hobby. I am currently using a Sangean ATS-803 with the internal antennas with good results. Is there information available on frequencies used by military services?" Sure, Joe, a number of information-filled books and registries are available covering all frequency ranges. Companies that offer these books all have catalogs showing what's available. Check the ads in this issue of *POP'COMM* for the names and addresses of these suppliers.

A number of readers have commented on the voice activity in EE that refers frequently to "Alligator Playground." I suspect these communications reflect US Navy training operations in which various ships are tracking aircraft with the latter trying to avoid detection. I believe the term "Alligator Playground" refers to the operational area.

Utility Intercepts
All Times Are UTC

286: Beacon MRJ at 2106 (LeSesne, PA).
290: Beacon FP, Frying Pan Shoals, NC at 0402 (Pat O'Connor, NH).
292: Beacon MIQ, Maiquetia, Venezuela at 0356 (O'Connor, NH).
306: Beacon R, St. Johns LS, FL at 0320 (O'Connor, NH).
322: Beacon U, Miami, FL at 0341 (O'Connor).
325: Beacon VUP, Valledupar, Colombia at 0343 (O'Connor, NH).
387: Beacon SPP, San Andres Isl., Colombia at 0353 (O'Connor, NH).
388: Beacon PV, Providenciales, Turks & Caicos Islands at 0356 (O'Connor, NH).
2031.5: Un-ID wkg WOM w/patch re ill passenger taken off ship by 'copter, USB at 0705 (Fernandez).
2182: EJM, Malin Head, Ireland in USB at 0034 announcing sked for marine info bc (O'Connor, NH).
2572: WLO, Mobile R., AL in USB w/Gulf & Caribbean wx & tfc lists at 0505 (Fernandez, MA).
2598: VCP, Canadian CG St. Lawrence, Nfld. w/wx in USBat 0534; VAU, CG Yarmouth, NS w/wx at 0543, also USB (J.M., KY).
2670: WTT3452, F/V Regina in USB at 1833 wkg USCG Boston re injured crew member of another vessel (O'Connor, NH).
2998: United 826 wkg Tokyo, USB at 1227 (Sabo, S. Korea).
3109: Spartan & Baker Boy in USB at 0030 tracking a/c (Eglin AFB??) (Williams, SC).
3116: Air Force 2 in USB at 0000 asking for sports scores (Williams, SC).
3130: P5O, 7YQ, I8D in USB at 0030 to Alligator Playground (Williams, SC). Possible USN maneuvers.
3292: YL/SS in AM w/5F grps at 0516 (Fernandez, MA).
3781: Great Society w/alpha-numerics in USB at 1651; Gooseberry hrd at 2047, followed by Unwrap wkg Rondon for radio check & advising he had "MCNS at this time." Then asked other stations to QSL. PACAF, but no freq designation (Sabo).
4112.6: NNTR, USS Theodore Roosevelt (CVN-71) in USB at 0230 w/telephone tfc via WOM (O'Connor, NH).
4125: WBV, Moran Towing, Staten Island, NY in USB Shiela, WZF3006 Amy Moran; WY5506 M. Moran (O'Connor, NH).
4360.5: COMNAVAIRPAC on USB at 1947 clg

COASTSTATION «OOSTENDERADIO»
Callsign : radiotelephony OSU
radiotelegraphy OST
QSL your report of 20.7.84 at 0110UTC
QSS 8652
REMARKS : Radioregulations Genève 1982
Chapter V art. 27 prohibiting :
1°- the unauthorized interception of radiocommunications not intended for the general use of the public ;
2°- the divulgence of the contents, simple disclosure of the existance, publication or any use whatever, without authorization, of information of any nature whatever obtained by the interception of the radiocommunications mentioned above in 1°.
(Bon 15.002-77).

POSTCARD

Tony Kobylski

USA

BELGIE — BELGIQUE
REGIE VAN TELEGRAFIE EN TELEFONIE — REGIE DES TELEGRAPHES ET DES TELEPHONES
GEWEST VAN DE RADIO MARITIEME DIENSTEN
OOSTENDE

OST - OSU

«OOSTENDERADIO»
KUSTSTATION — STATION COTIERE

QSL received by Tony Kobylski, MD. Note the reference to the Radio Regs.

NCVV, **USS Carl Vinson (CV 70)**. The ship replies 4066.1 kHz USB (Kammler, CA).

4373: Shadrack (o/c) in USB at 0352 wkg gnd sta Mud 13 re upcoming test. This is a USN training freq in heavy use by South Weymouth NAS, MA (Fernandez, MA).

4448: Two Canadian CG stas in USB scrambled at 0640 (Fernandez, MA).

4543: YL/GG in AM w/5F grps rptd X2 at 0620 (Fernandez, MA).

4663: Novosibirsk, USSR w/YL giving aviation wx USB 2054-2055. Khaborovsk & Toshkent hrd here frequently, but Novosibirsk not for a while (Sabo).

5400: US Army Corps of Engineers freq fairly active weekday mornings. Stas included WUG, WUG2, AKB, AKO, AJV, AMM all routine ips, USB at 1400 (J.M., KY).

5574: San Francisco in USB at 2148 wkg Korean Airliner w/patch to LAX, then QSY 11342 kHz (Kammler, CA).

5628: Tokyo in USB wkg United 58 at 1220, Tiger 5076 at 1223, others w/pos reports (Szalony, CA).

5696: USCG Portsmouth, VA in USB at 1357-1410 w/Rescue 1483 reporting smoke in cabin heading for emerg landing at Cape Hatteras, NC. Landed OK & tried to locate source of smoke (Fernandez, MA).

5725: FRL clg 3LA, both un-ID, in CW at 2250 (Jerry Rappel, IA).

6220: YL/SS in AM w/5F grps, each repeated X2 at 0538 (Fernandez, MA).

6506: USCG Kodiak, AK w/offshore wx 1649-1705 in USB. From 1700 was under QRM from USCG Honolulu (Sabo, S. Korea).

6712: Sundew w/alpha-numeric tfc, USB at 1710 on PACAF "Alpha 2" freq (Sabo, S. Korea).

6731: SAM206 to SAM Command, USB at 1954 w/writeup re lavatary doorknob came apart (Bonner, NY).

6761: Aircroft Carlo 42 asking Blackbird to ZOF (relay) tfc to Monty & Bunker Hill. Msg was JOPREP Jiffy wx report using authentication. Also hrd were Skybird, Scad 79, Legboat, Czar 14, Clutch, Worm 39, Barb 10, & Adversary. Active SAC net (Kammler, CA).

Abbreviations Used For Intercepts

AM	**Amplitude Modulation mode**
BC	**Broadcast**
CW	**Morse Code mode**
EE	**English**
GG	**German**
ID	**Identifier/ied/ication**
LSB	**Lower Sideband mode**
OM	**Male operator**
PP	**Portuguese**
SS	**Spanish**
tfc	**Traffic**
USB	**Upper Sideband mode**
w/	**with**
wx	**Weather report/forecast**
YL	**Female operator**
4F	**4-figure coded groups (i.e. 5739)**
5F	**5-figure coded groups**
5L	**5-letter coded groups (i.e. IGRXJ)**

6801.1: Beocon S in CW at 1129 (Tom Kneitel, NY).

6826: YL/SS announcing "atencion atencion" then into 3/2F grps at 0301, then 5F at 0305 (LeSesne, PA). Suspect 3/2F grps may have been heading for 5F text-- Ed.

6876: R9Q w/5L grps in CW at 1915. Another doy N1S hrd w/5L grps at 1612 (J.M., KY).

7446: YL w/rpts of KPA2 in AM mode from 2217-2221. Next day some thing at 2217 & 2316 (Sabo, S. Korea). Kneitel's Guide To Embassy & Espionage Communications book shows this as Israeli Mossad tfc-- Ed.

7485: NJVF, USS **Forrestal** testing all modes to Charleston Test Control at 1418. Tuesday mornings & early afternoons often find this freq active (J.M., KY).

7687: First a lot of EE chatter under somw CW. Then at 0406 on OM/EE broke in w/5L grps. Letters in the format were A B A D G SR T V X. At end letters A-F were said X2 then 0-9 count. First hrd in AM mode 0225 (LeSesne, PA).

7845: Two stas in USB w/scramblers, each with tones at end of xmsns. Hrd at 1255 (Fernandez)

8122: YL/SS in AM mode w/5F grps at 0616 (Fernandez, MA).

8300: YL/CC w/4F grps, each said X2. AM mode at 0055, 0130, 0913, 1000-1015, 1030, 1300-1325, 1617, 1638 (Sabo, S. Korea).

8362.8: 9VDD, ship **TFL Liberty** in CW at 1926 clg NMN (O'Connor, NH).

8551.5: CTP95, Oeiras Navrad, Portugal w/CW marker at 1931 (Osier, NY).

8737.5: Cyprus Radiotelephone Maritime Service in USB at 0148, OM voice mirror (Jarrett, TN).

8765.4: CG Comsta Portland clg **USCGC Stedfast** in USB at 2030. At 2208 NMN, USCG Comsta Portsmouth, VA w/wx (A. Nonymous, MO).

8778: S9X & others in USB at 1306 w/radio checks at 1306 (Fernandez, MA).

8861: Brazilian Air Force 2455 in USB at 0244 wkg Dakar (O'Connor, NH); Air France 095 wkg Recife (Jarrett, TN). Time?-- Ed.

8903: A/c 5XDAR (a Boeing 707) in USB at 0253 wkg Dakar re ETA Entebbe (Jarrett, TN).

8972: 9YW in USB at 2130 wkg 4WC & requesting authenticatians (Jarrett, TN).

8980: M8K to X3M in USB at 0633 for radio check, then scrambled. Probably USN (Sabo, S. Korea).

TABLE II

kHz	Call	UTC	Comments
425	EWKB	0318	F/V Kapitan Redkokasha-Russian Factory Fishing Ship wkg VAE Tofino, BC
	3ERQ4	0332	M/V Van Trader-Panamanian Bulk Carrier wkg VAK Victoria, BC
454	SQPL	1421	F/V Gemnini-Polish Factory Fishing Ship wkg VAI Vancouver, BC
	SQBZ	1420	F/V Grinwal-Polish Factory Fishing ship wkg NMC USCG San Francisco, CA
	VRBT	0402	M/V Spring Delight-British Reefer wkg NMC
	C4TU	2003	M/V Trade Carrier-Cyprian Bulk Carrier wkg NMC
468	JGFM	0120	M/V Pacific Arrow-Japanese Container Ship wkg KLB Seattle, WA
480	JMLL	0331	M/V Hemlock Queen-Japanese Bulk Carrier wkg VAE Tofino, BC
500	KLC	0529	Galveston, TX. CQ w/tfc list to follow on 484
	KFS	0530	Seattle, WA. CQ w/tfc list to follow on 436
	NMC	0400	USCG San Francisco, CA. CQ w/wx on 472
	VAK	0356	Victoria, BC CG. wkg M/V Dynamic
	VAE	0420	Tofino, BC CG. CQ w/marine info to follow on 484
	VAG	0448	Bull Harbour, BC CG. CQ w/marine info to follow on 484
	KPH	0421	San Francisco, CA wkg SZKD
	VAJ	0420	Prince Rupert, BC CG. CQ w/storm warnings info on 420
	WNU	0536	Slidell, LA. CQ w/dtfc list on 478
	CLA	0625	Havana, Cuba. CQ w/tfc list on 476
	NOJ	0530	Kodiak, Alaska CG. CQ w/tfc list on 470
	WCC	0652	Chatham, MA. CQ w/tfc list on 436
	NMO	0501	Honolulu, Hawaii CG. CQ w/marine info on 440
	XFK	0532	La Paz, Mexico. wkg SVNU
	XFE	0801	Ensenada, Mexico. Clg unid ship
512	EUPM	0553	F/V Slavnansky-Russian Factory Fishing ship wkg VAE Tofino, BC

8992: Upset 22 clg Loring AFB in USB for "Ground HF" check. Also a/c 60189 w/wx from Dover AFB (LeSesne, PA).

8993: Teal 15 & Teal 29 in USB at 1440 wkg Miami re severe wx info, also patched thru to Keesler AFB (Jarrett, TN).

9130: YL w/repeats of EZI2 in AM mode from 2104, same again at 2206 (Sabo, S. Korea). Similar to 7446 kHz activity-- Ed.

9723: YL/CC w/4F grps, each X2 in AM mode at 0006 (Sabo, S. Korea).

9886.8: Un-ID sta in CW at 0141 w/5L grps (A. Nonymous, MO).

10000: ZUO, Pretoria, RSA time sta at 0610, was a trest xmsn (Rappel, IA).

10124: YL repeating CIO9DZF in USB at 1650, C!O2 xmsn also noted here in AM mode (Sabo, S. Korea). Another Massad xmsn-- Ed.

10450: YL/CC w/4F grps each X2, USB at 2253 (Sabo, S. Korea).

10648: YL/GG sending 3/2 grps at 2113. Appeared to be LSB and/or scrambled, but so badly distorted could barely be read, altho sigs were good level (Kneitel, NY).

10969: Z5N, G6D, O4A, P6O, IQC, Mon-Fri calls of 1 or more stas sending 5L grps in CW at 1932, 1832, 1932, 1947, & 2102 (J.M., KY).

10854: YL/SS in AM mode at 2009 w/5L grps. CW in background made xmsn hard to copy (LeSesne, PA).

11234: RAF pilot asking ground sta for wx for Brentwaters, plys selcal check, USB at 2210 (LeSesne, PA).

11239: Harry 93 in USB at 1401. Patch w/Command Post for wx. (Jarrett, TN).

11288: Omaha 14 wkg Shark 167, USB at 2100 looking for a vessel (Kammlet, CA); Omaha 52, Slingshot, Rebel 1 & 2, USB at 1900 (A. Nonymous, MO). Anti-smuggler ops. Kneitel's Top Secret Registry 6th Edition lists freq designator as Yankee Delta-- Ed.

12544.2: TCRC, ship **Baltic Transporter** in CW at 1730 clg NMN (O'Connor, NH).

12545.4: D5UO, ship **Pacific Trader** in CW at 1730 clg GKB (O'Connor, NH).

12602: DUYE, Philippine ship **Amapola** wkg KFS in CW at 1513 (Hall, WA).

12609: JQNL, Japanese vessel **Friendship** in CW at 1746 wkg KPH. Prob. container ship (Hall, WA).

12610: HOUS, Korean vessel **Pacific Venture** wkg HLO in CW at 1915. Non-EE speaking op sending CW in EE had very odd "fist" (Hall, WA).

12707: 9VG34, Singapore in CW w/marker at 1825 (O'Connor, NH).

12709: A9M, Manama, Bohrein in CW at 1849 w/marker (O'Connor, NH).

12760: OXZ62, Lyngby, Denmark clg CQ in CW at 0320. Received QSL in 33 doys (Rappel, IA).

12864: XSW, Kachsiung, Taiwan clg CQ in CW at 2241. This is a rough one since freq is in constant use by an un-ID RTTY sta (O'Connor)

13000: LZW5, Varna, Bulgoria w/CW tfc at 2016 (Osier, NY).

13046: PZN, Paromaribo, Suriname w/CW marker at 2042 (Osier, NY).

13247: Air Force 2 in USB at 2050 w/patches to Crawn (WHCA) via Andrews AFB (A. Nonymous, MO).

13279: Khaborovsk, USSR YL w/wx bc in USB at 0038, also 0309 (Sabo, S. Korea).

13312: Rockwell test flight in USB at 1400 (Williams, SC).

14275: California Earthquake Health & Welfare Net, USB at 1945 (A. Nonymous, MO).

15875: Yokota Monitor, Japan w/misc tfc to un-ID sta, followed by RTTY sigs. USB at 0107. This is a NORPAC Loran freq (Sabo, S. Korea).

16280: Moscow, USSR in USB at 1430, EE/YL w/voice mirror of Moscow Radiotelephone System testing for circuit adjustment (Fernandez, MA).

16587: KHT, Collins Radio wkg KMJL, tanker **Omi Hudson** for patch. A good channel to monitor the Exxon fleet (Hall, WA).

16760: D5GR, Liberian **M/V Stolt Avenir** wkg NMR in CW at 1935 for AMVER report (Hall, WA).

16774: 7LOA, **Jyojin Maru,** & JEXK, **M/V Elbe Maru,** both Japanese vessels wkg KFS in CW(Hall, WA). Time?-- Ed.

16775: 9VOR, **M/V Belwood,** Singapore flag ship wkg VAI in CW at 2210 w/AMVER report (Hall, WA).

16780: OLGR, Czech ship **M/V Trinec** wkg OMP w/telegrams; followed by C4MQ, Cypriot ship **Mastro Giorgis S** wkg NMN while enroute Kenya. Both in CW around 1940 (Hall, WA).

16805: UPLO, Soviet vessel **Lensovet** wkg JIQ (un-ID) in CW at 2127. Also hrd BMGG, apparently a PRC flag ship wkg KFS (Hall, WA).

17130: ZSJ6, Cape Town, RSA clg CQ in CW at 1746 (Rappel, IA).

17236: Definite difference of opinion between Portishead R. & someone aboard ship **Alpha Commander** re vessel's callsign. Ship personnel insisted it was Panamanian registry w/callsign YBUP. Portishead kept telling the ship that its actual callsign was HO7191. USB at 1908 (J.M.)

18615: CLP, MFA Hovana, Cuba clg CLP8, Embacuba Conakry, Guinea in CW at 1809 (J.M.).

20410: OM/RR repeating "278-000" in USB at 0303 (Saba, S. Korea).

22409: JOR, Nagasoki, Japan clg CQ in CW at 2353 (J.M., KY).

22467: GKA7, Portishead, England in CW w/tfc list from 1710-1726 (J.M., KY). PC

BETTER SIGNALS

ANTENNAS AND SIGNAL IMPROVING ACCESSORIES

BY ED NOLL W3FQJ

An End-Fed Loaded-Longwire BCB And LW Antenna

An end-fed longwire, which is a quarter wavelength long, and fed against ground, Fig. 1A, is a resonant and sensitive antenna. It is one half the length of a dipole, cut for the same frequency range, and is a great space saver if you are interested in the effectiveness of a resonant antenna on the BCB and LW bands. A wise choice of length also includes top performance on the 160M ham band and the frequency spectrum between 1600-1800 kHz as well.

One can go a step further in making the antenna length more manageable, but resonant, by using a loading coil in the central region, Fig. 1B. Both factors are such, that a resonant BCB/LW antenna can be made that occupies a total length of about 250′. This is quite short in comparison to the actual physical length of a quarter wavelength at these frequencies. In fact, with the antenna to be described, resonance is obtainable from the 160M band, down into the low frequency end of the LW band.

The antenna, Fig. 2, was constructed as two basic inverted-V segments in series. I must admit, my installation is not the two perfect V's as shown, because it was necessary to wind it through two trees on the way. The two V sections permitted the antenna to drop down to a coil which was mounted at an accessible 5′ above ground, some distance beyond the center location of the antenna, to set up appropriate resonant sections that can be selected at this level. Note that there is an insulator just ahead of the coil. This insulator can be operated open, or shorted, depending upon the segment of the BCB band to be emphasized. Also, a separate high inductance coil can be placed across this insulator for LW band operation.

At the transmission-line end, a 5′ stake is driven into the ground, and a set of four 40′ radials pushed just beneath the surface serve as an adequate ground. The transmission line connects to the dipole-to-coax connector, Fig. 3. Ground side of connector attaches to bolt through stake. Four radials are attached to the same bolt. The far end of the antenna consists of an insulator and a rope that pulls up the second V section firmly to a stake. The mounting arrangement here should be such that you can make some adjustment in overall antenna length to obtain a low SWR if you plan to use the antenna for 160M ham operation. For ham use, three additional long-as-possible radials at the feed end will help low angle radiation for 160M DX'ing. If you like, you can lay the radials on the ground during the DX months using coat-hanger end sections that will hold down the radials, Fig. 4. This is an easy way to set up temporary radials at low cost.

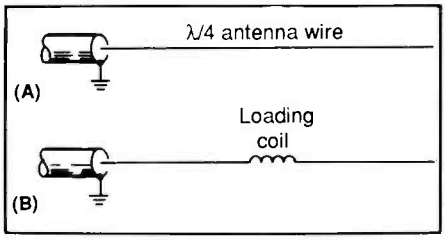


Fig. 1 λ/4 Antenna shortened with use of loading coil.

Fig. 3 Dipole-to-coax connector. Its ground side connects to ground stake.

The loading coil, Fig. 5, consists of a 9″ long 2″ ID PVC pipe close wound with #16 vinyl-covered wire over an 8½″ length. Include a jumper that can be connected across the coil for use when another segement of the broadcast band is to be favored.

The Separate Resonant Lengths of the Antenna

Next, the manner of segmenting the antenna is described. When you wish to favor the high-frequency end of the broadcast band, the center insulator jumper is left open, setting up a quarter wave end-fed resonant antenna at the high frequency end of the BCB band, Fig. 6A. This length also does well between 1600-1700 kHz, ready for the new broadcast allocations when they come along. In this mode of operation, the coil and the remainder of the antenna are out of the circuit. This segment performs well down to about 1000 kHz.

The mid-frequency BCB spectrum is favored by operating the antenna with a jumper across the insulator and with the coil jumper closed, Fig. 6B. You now set up a quarter wavelength end-fed antenna over this middle segment. The peak performance of the antenna is this connection

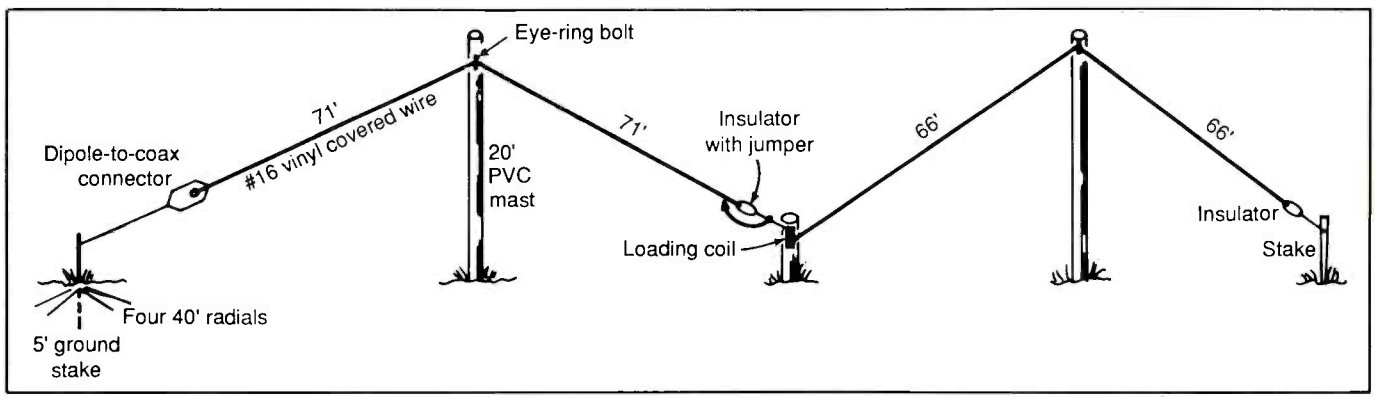


Fig. 2 End-Fed loaded longwire.

Fig. 4 Use of coat hanger ends to hold down radials. Push ends down into ground firmly.

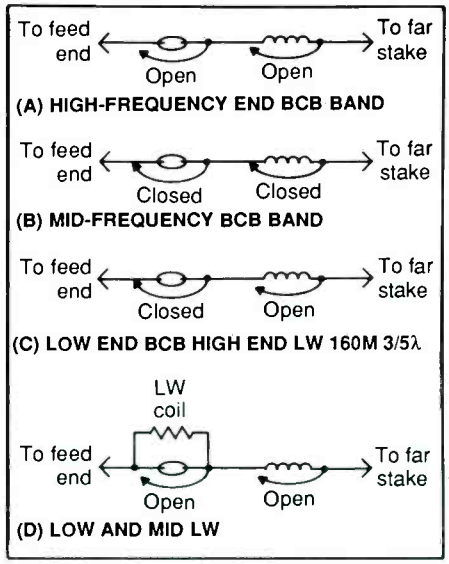


Fig. 6 How to resonate longwire to various band segments.

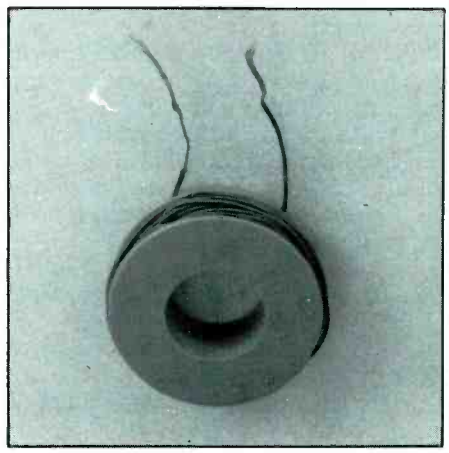


Fig. 7 Jumper coil for LW reception.

continues down to near 600 kHz. In fact, this manner of connection provides good average results over the entire BCB band, with emphasis on the middle frequencies.

In the third mode of operation with the insulator jumper closed and the coil jumper open, Fig. 6C, you actually set up two separate operating bands. First, the antenna operates as a resonant quarterwave at the low frequency end of the broadcast band with good pick up even into the high end of the LW beacon region. The LW marine band immediately above and below the 500 kHz distress frequency can give you some fine CW practice from the top quality keying of the maritime radio operators.

Second, the very same connection operates as a ¾ quarter wavelength end-fed wire antenna for 160M ham operation. As mentioned, some adjustment of the length of the wire can be made at the far end to establish a minimum SWR for transmitter operation.

In the final mode of operation, Fig. 6D, the jumper is left open across the coil and a second special coil is connected across the insulator after its jumper is opened. The addition of this coil permits the antenna to favor the mid and low frequencies of the LW band. This is the position that will probably be most useful to the LW beacon enthusiast.

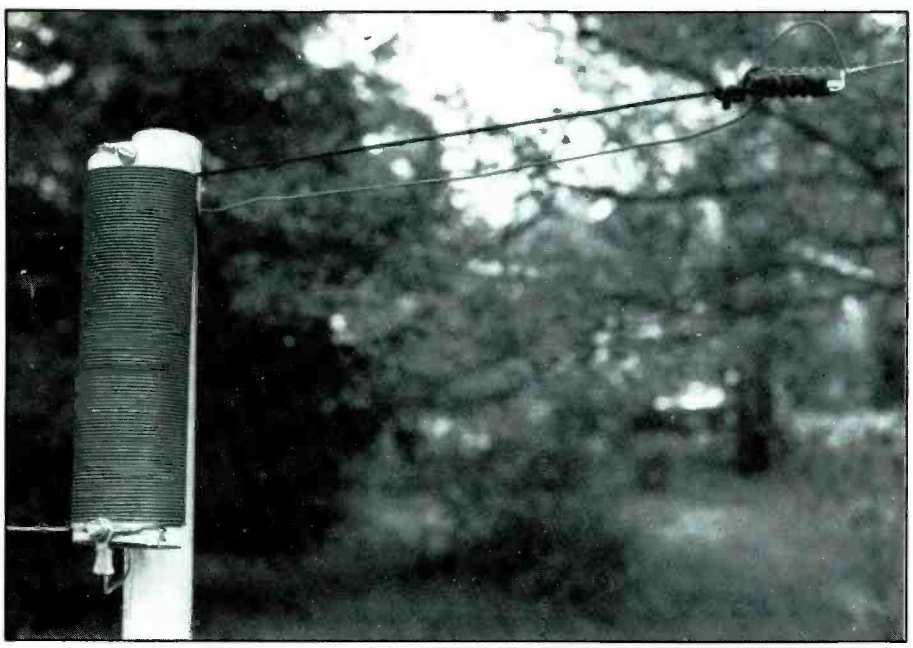


Fig. 5 Loading coil. Jumper is connected across insulator in photo. Jumper that can be connected across coil is shown at bottom of coil.

The coil form for this addition is a wire spool with a center cylinder diameter of 1″, Fig 7. Radio Shack sells their hook-up wire on such a spool. The width of the spool slot is ⅝″ and its slot depth is ½″. Fill the entire slot with a random winding. Use a very small gauge wire such as #24, or there about, with a thin insulating cover which can be an enamel or a thin plastic. I was lucky enough to find a spool of Belden 8014 indoor antenna wire among the basement collection of things I never use.

You can have a lot of fun receiving signals during the cold winter months on this antenna especially at sunrise, sunset and late at night. You can copy the more distant locals during the day. My book, "Easy-Up Antennas for Radio Listeners and Ham Radio Operators" ($17.95 plus $2 PH) has a chapter on BCB/LW antennas. A signed copy can be obtained from Ed Noll, P.O. Box 75, Chalfont, PA 18914. PC

RTTY

BY ROBERT MARGOLIS

THE EXCITING WORLD OF RADIOTELETYPE MONITORING

EBA, Madrid Naval Radio, Spain, may be using "foxes" on its RTTY test tapes instead of the usual RY's and SG's, monitoring showed.

Tuning to 2812 kHz one day that month to see what EBA was using as its latest innovative callsign, I noticed only "foxes" being sent, without an ID. Meanwhile, on 2848 kHz, there was a Spanish Navy-style callsign embedded in a tape of RY's and foxes. It appeared that Spain was changing the format of its tapes, although RY's and SG's were found on some of its other regular frequencies.

Where did I find an identifier, I noticed that EBA's selection of callsigns was retrogressing.

For the past several years, RTTY monitors have been watching the Spanish Navy move steadily upward through its list of callsigns from 33AME in 1984 (which apparently was derived from AME3 in use before then) to 98OQJ in 1987. I wondered what would happen when the number in the callsign reached 100.

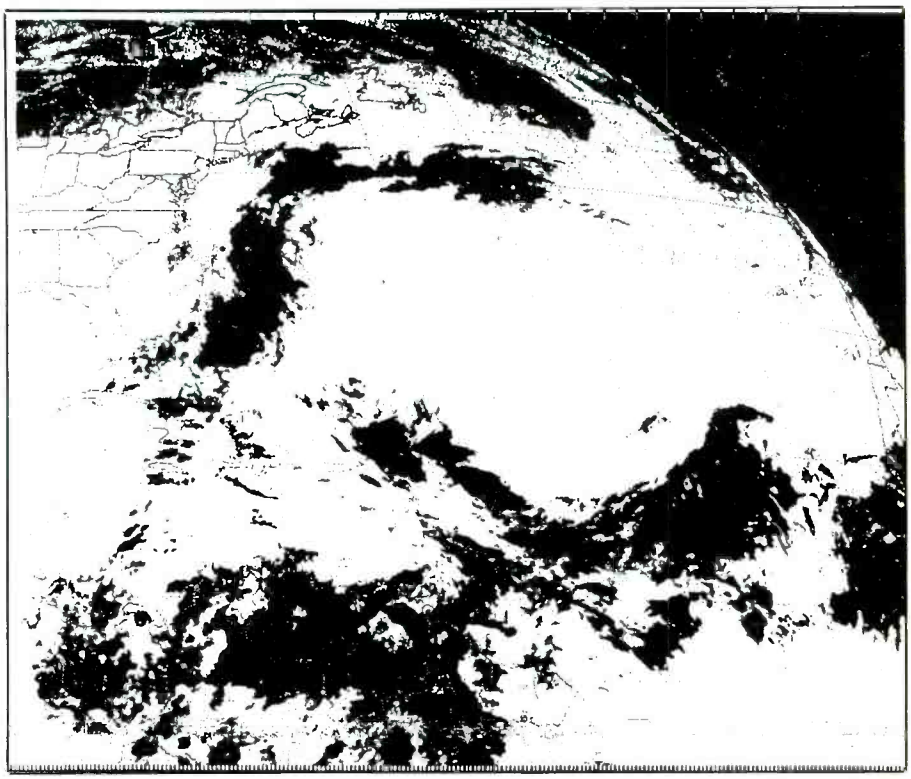
The callsigns had fallen instead to 78IJU, 78YLQ, 74KHW and 73QBD. It appeared there was a link between the callsigns and the stock market index as both were seen falling at the same time.

While slow tuning one day through a block of channels being used by GXQ, British Army , London, England, to send RYI's and foxes, it surprised me to find one of those channels being occupied by RY's.

Was someone at GXQ having a mental relapse? Hardly. It turned out to be a U.S. Air Force MARS station that had camped upon the GXQ transmission and began sending RTTY test tapes apparently without first determining if the frequency was in use.

The invader was the computer-operated MARSCOM 3, occupying 7682.5 kHz at 2151 UTC, with a RTTY setting of 170/45N. Meanwhile, GXQ was sending its test tapes on seven channels between 7681 and 7682.8 kHz at 170/50R & N.

The operator of the MARSCOM 3 system apparently realized why no MARS stations responded with a QSL to his test, and left the air. RYI's then were seen coming in at 170/50N from GXQ and the Air Force went down to defeat at the hands of the British.



GOES satellite photo of the North Atlantic sent by radio facsimile on 8080 kHz by NAM, U.S. Navy, Norfolk, VA. (Copy submitted by Bill Smith of Texas.)

It appears that the Russians in Cuba have had an effect not only on society there, but on RTTY transmissions, as well. Tuning in a test transmission on 7407 kHz some time ago from the Caribbean island to ITT World Communications, New York City, I noticed the sender's ID as RCC, La Habana, Kuba, Kuba? Yes, Kuba. In Spanish, "Cuba" is Cuba, but in Russian, it is "Kuba." Will we soon see Gawana, Kuba, on Cuban RTTY transmissions? Stay tuned.

Mystery station of the month: "DKI" sending RY's on 11008 kHz at 2019 UTC, 425/50N. DKI also tells another station that nothing is being received (ZAN), and to change frequency (ZAL) to 13386. More RY's followed then a request to ZAL to 12716. No more was heard from this station after 2030, and no station was heard on the other two frequencies.

One Friday I was monitoring a station on 19295 kHz at 1530 UTC sending encryption broken up by ZZZZZ. The RTTY setting was 425/50N. The station went off the air at 1545 without signing off. I continued to monitor this frequency to see if it would return.

At 1600 a woman came on this frequency on USB announcing "Hotel Kilo" thusly, "ho-TELLL ki-LOOO," lengthening the second syllable of each word. She would repeat this four times in succession and a short

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QRA QRA QGA DE 4UNQ RYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRY
QRA QRA QRA DE 4UNQ RYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRY
QRA QRA QGA DE 4UNQ RYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRY
QRA QRA QRA DE 4UNQ RYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYHYRYRYRYRYRY
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Test tape of 4UNQ, United Nations interim forces in Lebanon, En Naqura, Lebanon. Was on 14491.9 kHz at 1756 UTC, 75/425R. (From the collection of Robert Margolis.)

arabesque musical marker would come between each announcement. At 1604, she began dictating a five-figure grouped message in German, with "endung" occurring at 1616. Nothing was heard on this frequency after that.

Is this a coincidence or is there some connection between the RTTY and the voice transmissions? Maybe "Havana Moon" would know.

While I was monitoring a test tape of RY's from 4UZ, United Nations, Geneva, Switzerland, on 15992.2 kHz, someone came on the line suddenly with "TAKE IT EASY. NOT A LOCAL TEST. DON'T PANIC." Never did find out what was happening to that distraught fellow on the other side of the line. Could it be that he was at the end of the roll of teleprinter paper and couldn't find a spare?

The higher shortwave radio bands continue to open up for good DX'ing. I have found the French Navy at Fort de France, Martinique, with TDM RTTY on 24870 kHz, and LSA 8, Boca Radio, Argentina, with CW traffic in Spanish and English on 25197 kHz. Fred Hetherington of Florida reports monitoring Soviet merchant ships working Sevastopol Radio, USSR, with RTTY on 25081 kHz.

Conversely, an increasing number of European and African RTTY stations are coming in on the 7, 8, and 9 MHz bands during the mid-afternoon hours here in the U.S. The 3 through 6 MHz bands are slipping in around dinnertime. So you should try DX'ing on some of the lower shortwave radio bands as well as the higher ones. Happy hunting!

Hetherington says that he can determine if he's going to get good DX by tuning to the CW amateur radio beacon PY2AMI from Brazil on 24900.8 kHz. If he hears the beacon, he knows he will have a good day of RTTY monitoring awaiting him. Thanks for the tip, Fred! I tried it and it works well. And I live alot further away from Brazil (more than 5,300 air miles) than does Fred (about 3,700 miles).

A special thanks to Bill Smith of Texas for sending me several facsimile press photos he copied from his monitoring of LRD83, Reuters, Buenos Aires, Argentina, on 18433 kHz from 2300-0100 UTC. The sharp quality of those intercepts convinced me after months of debating to buy a facsimile decoder for myself.

Unfortunately, we cannot reproduce the photos in *POP'COMM* because we would have to get Reuters' permission. He also sent a weather satellite facsimile photo, seen with this column, that was transmitted by NAM, the U.S. Navy base at Norfolk, VA.

If you have any interesting, or out of the ordinary RTTY or FAX intercepts you would like to talk about, why not report them to this column? Send them to RTTY column, Popular Communications, 76 North Broadway, Hicksville, New York 11801. Please note that it'll take several months for your reports to appear in print.

Please do not send reports to us that are incomplete with information. I have a stack of loggings that tell such things as TASS, Moscow (actually it was from Cuba), without saying in what language was the news broadcast; NBA sending RTTY with no other details other than the frequency; a station sending plaintext weather in English but no identity (it was WLO), and many more exasperating examples from several contributors. Items such as these, that lack important and easy to obtain information, are a disservice to the reader and therefore will be discarded.

Your fellow readers deserve the most complete information possible for their own personal use. Please do not rely on me to do all the research for you. I will help whenever possible with loggings that stump you, but with the large volume of material I receive, I just can't spend anymore time than is necessary in looking up easy to obtain information. Details of loggings consist of the frequency in kHz, callsign, station identity and location, what was being transmitted, the time per UTC, shift in Hz/baud speed/N or R polarity, your name, and the state in which you reside. If a FAX loggings is being submitted, include the LPM/IOC settings, and descriptions of the photos and accompanying captions, along with the sending stations identity.

Extending the welcome mat this month to Takashi Kuroda of Tokyo, Japan, who says that he began monitoring RTTY last September, but he cannot find detailed material about RTTY in Tokyo.

He wants to inform you readers "that I want to exchange information on RTTY monitoring and other fields of shortwave (radio) listening with anybody in the world!"

Share your experiences with him by writing to him at #201 Nakamura-So, 1-4-9, Higashi-Ayase, Adachi-ku, Tokyo 121 Japan.

Other newcomers here are Mark Widerstrom of Texas, Brian Webb of California, Kenneth Horrex of New York and Brian Alexander of Pennsylvania. Glad to have you with us.

Now to move on to that part of this column that reveals why many of you might want to postpone doing your income taxes until April 14. Here are the loggings of RTTY stations you monitored, which were more fun to do than it will be in putting the loggings of your financial earnings on a 1040 form.

RTTY Intercepts
All Times Are UTC
(Settings= Shift/Baud/Polarity)

122.3: CFH, Canadian Forces, Halifax, NS w/coded wx at 0225, 350/75R (Ed.).

132.8: Un-ID USN w/crypto at 0240, 85/75R (Ed.).

134.5: Un-ID USN w/crypto at 0235, 85/75R (Ed.).

518: NMG, USCG New Lorleans, LA w/wx & notices to mariners, FEC 0620-0645 (J.M., KY).

2419.3: UN-ID Spanish naval sta w/tfc in SS & crypto at 0530, 850/75N (Brian Alexander, PA).

Abbreviations Used In The RTTY Column

AA	Arabic
ARQ	SITOR mode
BC	Broadcast
EE	English
FEC	Forward Error Connection mode
FF	French
foxes	"Quick brown fox . . ." test tape
GG	German
ID	identification/ied
MFA	Ministry of Foreign Affairs
nx	news
PP	Portuguese
RYRY	"RYRY . . ." test tape
SS	Spanish
tfc	traffic
w/	with
wx	weather

2820: NNN0TQH, USN MARS relaying telegrams to NNN0OTW at 0428, 170/75R (Ed.).

2848: 73QBD of Spanish Navy w/RYRY & foxes at 0416, 850/75R (Ed.).

3209: NMG, USCG New Orleans w/RYRY to NODS, **USCGC Salvia (WLB 400)** at 0552, 170/75R (J.M., KY).

3266: LRB83, TELAM Buenos Aires, Argentina w/nx in SS at 0041, 850/50R (Dallas Williams, CO).

3840: LRO23, NA Buenos Aires, Argentina w/nx in SS at 2343, 850/75R (Ed.).

4002: YRR2, Bucharest Meteo, Romania w/coded wx at 2338, 425/50R (Ed.).

4018: ZRO5, Pretoria Meteo, RSA w/coded wx at 2338, 425/75N (Ed.).

4242.6: Y5M, Ruegen R., GDR w/nx in GG at 0130, 170/50R (Fred Hetherington, FL).

4478: RPFN, Monsanto Navrad, Portugal w/foxes at 0130, 850/50R (Hetherington).

4489: GFL26, Bracknell Meteo, England w/coded wx at 2334, 425/50R (Ed.).

4607: 78YLQ, Spanish Navy, w/RYRY & SGSG at 2244, 850/75R (Ed.).

5117: STK, Khartoum Meteo, Sudan, w/coded wx at 0133, 425/50R (Ed.).

5240: 4OC2, TANJUG Belgrade, Yugoslavia w/nx in EE at 0005, 425/50R (Ed.).

5403: AKB, un-ID sta, possibly US Army Corps of Engineers w/work sked & river dredge info, 425/75R at 1400 (J.M., KY).

5424: 6VY33, ASECNA Dakar, Senegal w/coded wx at 0345, TDM 425/96A (Ed.).

5544.4: CAK, Santiago Aero, Chile, w/msgs in SS & aero wx at 0429, 850/50N (Ed.).

5730.7: 5UA, ASECNA, Niamey, Niger w/coded wx at 0354, TDM 425/96A (Ed.).

5733: HZJ, Jeddah Aero, Saudi Arabia, w/coded wx at 0344, 370/50N (Ed.).

5740: HZN46, Jeddah Meteo, Saudi Arabia w/coded wx at 0040, 850/50N (Ed.).

5748: Either 364/A or EYR/A w/RYRY & 5L tfc at 2215-2230, 425/50R (Hetherington, FL).

5783: 5TY, ASECNA Nouakchott, Mauritania w/coded wx at 0042, TDM 425/96A & coded wx at 0331 on Chan. B (Ed.).

5785: RCR72, Khabarovsk Meteo, USSR w/coded wx at 1235, 1000/50R (Ed.).

5807.5: XTU, ASECNA Ouagadougu, Burkina Faso w/coded wx at 0302, TDM 725/96A (Ed.).

5832.6: RFQP, French Navy, Djibouti w/"controle de voie" at 0227, TDM 425/96A & tfc at 0251 on Chan. B (Ed.).

5839.5: FTF848, AFP Paris, France, w/nx in AA at 0316, 425/50N (Ed.).

5856: Un-ID sta w/foxes & counting at 1220, 170/75N (Tom Kneitel, NY).

6251: 781JU, Spanish Navy clg 74KHW w/RYRY & SGSG at 0412, 850/75R (Ed.).

6348: Un-ID USN (possibly NAM) w/very quick brown foxes at 1947, 850/75R. Many others have also logged this one (Ed.).

6403: RKG, Moscow R., USSR w/telegrams in RR, a 4F msg, & RYRY, 170/50R (Ed.).

6624: Un-ID w/RYRY at 1156, 425/45N (J.M., KY). May be CLP1, MFA in Havana, according to a report by Fred Hetherington-- Ed.

6739.7: Un-ID Egyption diplo post w/tfc in AA at 0230, ARQ (Hetherington, FL).

6765.4: DXQX marker in ARQ at 1121, a short msg mentions ETA at Port Menier is 1000 (Kneitel, NY).

6830: RDW72, Kharbarovsk Meteo, USSR w/coded wx at 1015, 1000/50R (Hetherington, FL).

6896//6948: CLN48, PTT Havana, Cuba w/foxes & counting for ITT NY at 1225, 425/50R (Kneitel, NY).

6900: RFTJ, French Navy, Dakar, Senegal w/controle de voie at 0800, TDM 850/96A (Alexander, PA).

6905: Un-ID INTERPOL w/IPUK market, ARQ at 2256 (Alexander, PA). IPUK stands for INTERPOL United Kingdom, so this is sta GMP, INTERPOL in London-- Ed.

6915: BAP46, XINHUA Beijing, PRC w/nx in EE at 1530, 50R (Takashi Kuroda, Japan).

6999: CSY, Santa Maria Aero, Azores, w/RYRY at 0406, 850/50N (Williams, CO).

7327.5: JAE27, Jiji Tokyo, Japan w/nx in SS at 1045, 830/50R (Hetherington, FL).

7402.5: JMG3, Tokyo Meteo, Japan w/coded wx at 1337, 850/50R (Ed.).

7426.2: 5NL, Lagos Aero, Nigeria w/RYRY at 2255, 425/50N (Alexander, PA).

7474: TJK, ASECNA Douala, Cameroon w/RYRY at 2108, 425/50N (Ed.).

7487: NJVF, USN Aircraft Carrier **USS Forrestal (CV 59)** w/foxes to Charleston Test Control at 1453, 850/75R (J.M., KY).

7505: ZRO2, Pretoria Meteo, RSA w/coded wx at 0225, 525/100N (Ed.).

7525: ANGOP Luanda, Angola w/nx in PP at 1928, 425/50R (Ed.).

7539.4: ZLK48, Christchurch R., New Zealand w/msg to NGD, USN at McMurdo Station, Antarctica, 170/75R at 0940 (Hetherington, FL).

7658: YZD, TANJUG Belgrade, Yugoslavia w/nx in EE at 1955, 425/50R (Ed.).

7715.6: VMB, Brisbane R., Australia w/foxes at 1040, 85/75N (Hetherington).

7775: INFOIND, New Delhi, India w/nx in EE, 50N at 1540 (Kuroda, Japan).

7855.3: RDK24, Moscow Meteo, USSR w/coded wx at 1302, 1000/50R (Ed.).

7922.6: 5YA, ASECNA Niamey, Niger w/coded wx at 0212, TDM 425/96A (Ed.).

8016.3: VER, Canadian Forces, Ottawa, ONT w/RYRY & foxes at 1804, 170/75N (Ed.).

8030: IRF50, ANSA Rome, Italy w/nx in EE at 1353, 425/50R; also 5UA, ASECNA Niamey, Niger w/RYRY at 2139, 170/50T (Ed.).

8050: 9BC25, IRNA Tehran, Iran w/nx in EE at 2150, 425/50R (Hetherington, FL).

8066: UQA, un-ID sta w/RYRY DE UQA at 0428, QSY 8061 kHz at 0437, 425/75N (J.M., KY). My records show USSR listings for callsigns UQB & UQC, but no UQA-- Ed.

8067.5: Y2V7, ADN Berlin, GDR w/nx in EE at 2130, 425/50N (Ed.).

8322: Colombian ships wkg HJN2 after 0015 in ARQ were HJNL, **Rio Amazonas**; HJNS, **Cd. de Pasto**; & HJNR, **Cartagena de Indias.** Assume HJN2 is Bogota (Ed.).

8328.5: SQLL, Polish ship **Zonda** wtelex in ARQ at 2145 (Ed.).

8492: NMF, USCG Boston, MA w/wx & hydrolants, FEC at 1702-1719 (J.M., KY).

9042: 5YE, Nairobi Meteo, Kenya w/RYRY & coded wx at 0328, 850/75N (Williams, CO).

9068: (Apparently) JXZ, NATO Oslo, Norway w/foxes, no ID's. Was 235/50R at 1320 (Hetherington, FL).

9100.9-9102.8: RUES, USDoS Washington, DC w/foxes on several channels at 1717, 170/75R (Hetherington, FL).

9140: Y7A39, MFA Berlin, GDR w/RYRY, 425/50N (Hetherington). Time?

9154: D4B, Sal Aero, Cape Verde w/coded wx at 2300, 850/50N (Hetherington, FL).

9224: TJK, ASECNA Douala, Cameroon w/RYRY at 0328, 850/50R (Williams).

9231: 9KT27, KUNA Safat, Kuwait w/nx in AA at 2027, 425/50R (Ed.).

9265: ZRH23, Cape Town Navrad, RSA w/RYRY & foxes at 0100, 850/75R (Hetherington, FL).

9280: Un-ID w/RYRY, 50R 1430 1453 (Kuroda, Japan).

9285: TNL, ASECNA Brazzaville, Congo w/RYRY at 2218, 425/50N (Ed.).

9290: RTQ78, Sverdlovsk Meteo, USSR w/coded at 0344, 1000/50R (Williams, CO).

9328: VNA, Hanoi, Vietnam w/nx in EE at 1520, 50R (Kuroda, Japan).

9375.3: RFHI, French Navy, Noumea, New Caledonia w/wx advisory in FF at 1135, TDM 850/96A (Hetherington, FL).

9391: SOJ239, PAP Warsaw, Poland w/RYRY at 2008 & nx in EE at 1842, 250/50N (Ed.).

9394.5: HMF84, KCNA Pyongyang, N. Korea w/nx in FF at 1842, 250/50N (Ed.).

9347.5: STK, Khartoum Aero, Sudan, w/coded wx at 2325, 425/50N (Ed.).

9420.5: GYU, Royal Navy, Gibraltar w/RYI's & foxes, 850/75R at 1045 (Hetherington, FL).

9430.3: ZAT, ATA Tirana, Albania w/nx in FF at 0915, 510/50N (Hetherington, FL).

9846: TUH, ASECNA Abidjan, Ivory Coast w/RYRY at 2051, 425/50N (Ed.).

9965: 70B45, ANA Aden, S. Yemen w/nx in AA at 1630 & nx in EE at 1819, 425/50N (Ed.).

10169: HSW63, Bangkok Meteo, Thailand w/wx advisory in EE at 1200, 600/50N (Hetherington, FL).

10220: CML28, PTT Havana, Cuba at 1347 clg ITT NY, 425/50R (Kneitel, NY).

10258: Un-ID w/foxes at 1500, 50 bauds (Mark Widerstrom, TX). I found foxes here at 75R at 1900 w/tentative ID as NAM, USN Norfolk-- Ed.

10270: RKA25, TASS Moscow, USSR w/nx in EE at 1610, 50R (Kuroda, Japan).

10297.6: NMG, USCG New Orleans, LA w/msgs at 2315, 170/75R (Alexander, LA).

10348: (Apparently) GYU, Royal Navy, Gibraltar w/TDM xmsn at 2135 altho one ref says Bracknell Meteo. Crypto followed by coded wx at 2200 for location in Spain. Back to crypto but w/coded wx for Gibraltar locs at 2258 & 2309. Off at 0000. Was TDM 425/96A (Ed.).

10508.5: UN-ID w/RYRY, 50 bauds at 0200 (Widerstrom, TX).

10518.5: 5AQ56, JANA Tripoli, Libya w/nx in AA at 1456, 425/50R (Ed.).

10570: RWH79, Alma Ata Meteo, USSR w/coded wx at 0311, 500/50N (Williams)

10597: Un-ID w/5L grps at 2109, 525/50R. Ended w/QRU SK (Kneitel, NY).

10599.5: VNA25, VNA Hanoi, Vietnam w/nx in EE at 1519, 425/50R (Ed.).

10614.4: FTK61, AFP Paris, France w/nx in FF at 1845, 425/50N (Ed.).

10634.2: MAP Rabat, Morocco w/nx in FF at 1813, 425/50R (Ed.).

10780: SDN6, STA Stockholm, Sweden w/tfc to Vietnam at 2025, TDM 425/96A & B (Ed.).

11008: DKI, un-ID sta w/RYRY at 2019, 425/50N (Ed.).

11012.5: SUU29, Cairo Meteo, Egypt w/coded wx at 2004, 350/50R (Ed.).

11013: DyN, Burenos Aires, Argentina w/nx in SS at 2203, 425/50N (Williams)

11027: 9PL, Kinshasa Aero, Zaire w/line test at 0312, 425/50N (Williams, CO).

11035: UKS, SAM Barentsburg, USSR-Spitsbergen, Norway w/msgs in RR & a "Kriptogramma Moskwa Delxta" to ULV at 1228, 425/50R (Ed.).

11063: LZU2, Sofia Meteo, Bulgaria w/coded wx at 1226, 425/50R (Ed.).

11069.5: LOR, Puerto Belgrano Navrad, Argentina w/5L tfc at 0025, 170/75N (Ed.).

11093: Un-ID w/5L tfc at 2100 (Hetherington, FL).

11100: RHH74, Kuibychev Meteo, USSR w/coded wx at 0324, 850/50N (Williams).

11125: Y3B, ADN Berlin, GDR w/nx in EE at 1510, 425/50N (Ed.).

11423.5: SPW, Warsaw, Poland w/nx in Polish, FEC at 1215 (Ed.).

11464: MSS, British Army, Belize City, Belize w/RY's & foxes, 850/75R at 1744 (J.M., KY).

12108.3: IRJ21, ANSA Rome, Italy w/nx in EE at 1850, 425/50N (Alexander, PA).

12212: YZO7, TANJUG Belgrade, Yugoslavia w/RYRY at 0354 & nx in EE at 0404, 700/50R (Williams, CO).

12492: C6BC, Bahamian cargo ship **Harold La Borde** w/telex in ARQ at 2000 (Ed.).

12496.8: UFB, Odessa R., USSR w/telegrams in RR at 1727, 170/50N (Ed.).

13496.5: SPW, Warsaw R., Poland w/nx in Polish, FEC at 1800 ED.).

13530: RVW53, Moscow Meteo, USSR w/coded wx at 0104, 1000/50R (Ed.).

13540: LRO81, TELAM Buenos Aires, Argentina w/nx in SS at 0059, 850/50R Ed.).

13707: Un-ID w/wx for S E Asia & S China Sea at 1739, 850/75R (Williams, CO). Only RTTY sta I find listed here is RXA77, Alma Ata Meteo, USSR-- Ed.

13803.3: RCR78, Khabarovsk Meteo, USSR w/coded wx at 0053, 850/50R (Ed.).

13895: Y2V47, ADN Berlin, GDR w/nx in EE at 1400, in SS at 1556, & in AA at 1735 (Williams, CO).

14360: ULJ, an un-ID USSR sta w/RTTY & Z-signals, 1418-1452, 425/50R (Ed.).

14367: BZP54, XINHUA Beijing, PRC w/economic nx briefs in EE at 1241, 425/50R (Ed.).

14369: MFA Stockholm, Sweden w/telexes (UDTEX) in Swedish to "Ambassaden Havana". Texts dealt Swedish policy in Central America. Was 425/75R at 1640 (Ed.).

14370.5: HZJ, Jeddah Aero, Saudi Arabia w/coded wx at 1710, 425/50N (Ed.).

14383: GXQ, British Army, London, England w/RYI's & foxes at 1456, 425/75N at 1355 (Ed.).

14389: Un-ID w/crypto & XAXAXA... Each msg w/numbered headers. Was 425/75N at 1355 (Ed.).

14426: Un-ID w/a 5L msg at 1357, 425/100N (Ed.).

14452: KCNA Pyongyang, N Korea w/RYRY at 0756, 250/50N; nx in FF at 1248 (Ed.).

14453: NBA, USN Balboa, Panama w/RYRY & SGSG at 1359, 850/75R (Williams, CO). Was using this freq for IAWG tfc-- Ed.

14462: Y7B26, GDR embassy, Sofia, Bulgaria w/5F tfc to Hanoi at 1251, 250/75N (Ed.).

14466.7: Pakistani embassy, Bonn, FRG w/5L tfc to MFA Islamabad, Pakistan, ARQ at 1722 (Ed.).

14470.3: VOA, La Union, Poro Island, Philippines w/nx in EE at 0502, 425/75N; at 0520 sent ID as PRS (Philippine Relay Station) (Ed.).

14491.9: 4UNQ, UNFIL En Naqura, Lebanon w/RYRY & QRA 1756-1803, 425/75R (Ed.).

14534: Un-ID w/5L msg, 1327-1335, 425/75N (Ed.).

14545: RDW24, APN Moscow, USSR w/nx in RR at 0821, 425/100N (Ed.).

14567.5: HMF32, KCNA Pyongyang, N. Korea w/nx in EE at 0434, 425/50N (Ed.).

14569: Y7A58, MFA Berlin, GDR

w/RYRY at 0753, 425/50N (Ed.).

14580: RCC74, APN Moscow, USSR w/nx in AA at 0751, 425/100R (Ed.).

14613.7: FA80, un-ID sta w/FF tfc at 1712, ARQ (Ed.).

14633: 9UA, Usumbura Aero, Burundi w/RYRY at 1707, 425/50N (Ed.).

14637: CME326, Czech embassy Havana, Cuba w/telexes at 1327, 500/75N (Williams)

14645.7: Un-ID Egyptian diplo sta w/AA tfc at 1827, ARQ (Ed.).

14690: RIC73, APN Moscow, USSR w/nx in AA at 1827, 425/100R (Ed.).

14699: YIX70, INA Baghdad, Iraq w/nx in AA at 1148, 425/50R (Wolfgang Palmberger, FRG).

14764: A9M70, GNA Manama, Bahrain w/nx of plans to install a radar net in Kuwait to confront "any aerial or sea agressions." Was 425/75R at 1519 (Ed.).

14812: Un-ID w/crypto w/ZZZZZ at 1220 & RYRY 1225-1227, 500/50R (Ed.).

14815: Un-ID w/5L tfc at 0833, 425/75N (Ed.).

14838: VVD65, New Delhi Meteo, India w/coded wx at 1324, 425/50R (Palmberger).

14870: Un-ID w/5F tfc at 0710, 425/75N Ed.).

14909.7: Un-ID Egyptian diplo sta w/tfc in AA, ARQ at 1215. Possibly Egyptian embassy in Tunisia (Ed.).

14936.3: Un-ID USN w/very quick brown fox at 2300, 750/75R (Ed.).

14940: RIC71, TASS Moscow, USSR w/nx in FF at 1207, 425/50R (Palmberger, FRG).

14977.5: OLM4, PTT Prague, Czechoslovakia w/RYRY at 1612, 425/50R (Williams, CO).

14991: Un-ID w/notams at 0816 (Palmberger, FRG). Probably TNL-- Ed.

15670: HGM36, MTI Budapest, Hungary w/RYRY to Central America at 1611, 425/50N; nx in SS at 1613, leads off w/sports scores (Ed.).

15845: SUA289, MENA Cairo, Egypt w/nx in AA at 1421, 425/50R (Ed.).

15950: Un-ID w/RYRY, SGSG Puueba de CXR + foxes, 75N at 2308 (Brian Webb, CA). CXR is Montevideo Navrad, Uruguay-- Ed.

15992: 4UZ, UN Geneva, Switzerland wkg Cyprus asking for environmental pollution info re Cyprus, 425/75R at 1545 (Ed.).

16016: Possibly UTVK, Tchanych R., USSr w/crypto & text in RR at 1443, 425/75N (Ed.).

16017.5: Crypto after RIRIRI..., or NBNBNB..., w/occasional repeats of ZSDUITSJHG. Was 425/100R at 1423 (Ed.).

16045: CLP1, MFA Havana, Cuba w/tfc in SS & 5L to CLP18, Embacuba, Dar-es-Salaam, Tanzania, 500/50N at 1845 (Hetherington, FL).

16202: CCF of Chilean Navy clg HDN w/RYRY at 1315, 1000/75N. Seems to have replaced USDoS ops that used to be on this freq (Williams, CO).

16296: Un-ID w/crypto containing numbered headers at 1537, 700/75N (Ed.).

16682.5: DBBH, ship **Meteor** w/telex to DCL at 1729, ARQ. Ship is a FRG gov't research vessel operated by Deutsches Hydrographisches Institut for the Ministry of Transport. Crew of 57 (Ed.).

17468: Un-ID w/RYRY, SGSG & foxes, 850/75R at 2242 (Webb, CA). Could it be PWZ33, Rio de Janeiro Navrad logged here several times?-- Ed.

17655: RFHIS, French Navrad, Noumea, New Caledonia w/tfc in FF at 0054; crypto at 0057, 850/75R (Williams, CO).

18603: VOA Greenville calling VOA Munich w/RYRY at 1423, 85/75R (Williams, CO).

18697: DFS70L3, DPA Hamburg, FRG w/nx re N Africa in EE at 1411, 425/50N (Williams, CO).

18700: DFS70H1, DPA Hamburg, FRG w/nx of Algeria in EE at 1414, 425/50N (Williams, CO).

19100: RFLI, French Navrad, Fort de France, Martinique w/controle de voie at 1428, TDM 850/96B (Ed.).

19529: NMG5, Tokyo Meteo, Japan w/coded wx at 0048, 850/50R (Williams).

19747: 6VU79, Dakar Meteo, Senegal w/coded wx at 1658, 425/50R (J.M., KY).

19792: VOA, Poro La Union, Philippines w/economic nx in EE at 0045, 425/75N (Williams, CO).

20106: Un-ID w/crypto after ZZZZZ at 1950, 425/45N (Ed.).

20127.2: UN-ID w/crypto after CLCL... Numbered headers preceded msgs. Was 650/75R at 1613.

20132: MFA Belgrade, Yugoslavia w/nx in Serbo-Croat at 1557, 425/75N (Ed.).

20415: CLP45, Embacuba Luanda, Angola wkg Havana at 2005, 425/75N (J.M., KY).

20838: Un-ID sta w/RYRY at 1844, 425/50R, then into 170/50R at 1847 w/RYRY; returned to 425 Hz shift at 1848 w/RYRY; then QSY 20839 kHz at 1849 w/RYRY at 425/50N. Ended w/ZZZZZ QSA & QRU NIL at 1851 (J.M., KY). Was CLP1 in Havana-- Ed.

21863.8: A N. Korean embassy w/5L tfc to MFA Pyongyang & telegrams in Romanized Korean at 1730, 510/50N (Hetherington, FL). Same sta at 1745 w/telegrams in Korean, 425/50N (Kenneth Horrex, NY).

22120: CCS w/text in SS to CCBL, 850/50R at 2118 (Webb, CA). CCS is Santiago Navrad, Chile; CCBL is an un-ID Chilean warship-- Ed.

22193: EQPT, ship **Iran Ghafari** w/telex in EE at 1427, ARQ, Msg begins w/religious preamble (Ed.).

22196.5: UTNI, Soviet cargo ship **Fritz Hekkert** w/"Kriptogramma na Perfolente" to UJY, Kaliningrad R., USSR, ARQ at 1348. Possible EE translation is "cryptogram on perforated tape" (Ed.).

22564.5: SAB907, Goteborg R., Sweden w.plaintext wx in EE to 6ZYQ, ship **Log Challenger** (Ed.).

22574.5: NMO clg CQ in FEC at 2033 (Webb, CA). This is USCG Honolulu--Ed.

22777.7: GHH, Jamestown Meteo, St. Helena w/coded wx at 1400, 425/50N (Hetherington, FL).

22865: 5YEB, Nairobi Meteo, Kenya w/coded meteo at 1850, 425/50R (Hetherington, FL).

22915: FTW91, DIPLO Paris, France w/nx in FF/EE/PP/SS, all day & past sunset, 425/50N (Hetherington, FL).

23405: Warsaw R., Poland w/nx in Polish, FEC at 1415 (Hetherington, FL). **PC**

Please send all reader inquiries directly.

SCANNER SCENE

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

BY CHUCK GYSI, N2DUP

While springtime brings thoughts of erecting new antennas and repairing old ones, it's time to do some spring cleaning here at POP'COMM and empty out the mailbag.

Dave Goodson, KA4FUS of Orlando, Florida, asks about the tones used to alert fire departments and was wondering about decoding them. First, as Dave probably knows, the tones are used to activate receivers in the firehouses, as well as pagers that might be carried by the firefighters. The pagers and firehouse receivers typically remain silent until they detect the specific tone they are equipped to decode. The tone-alerting devices also might be used to set off fire sirens in the community. Most tone-alerting devices used by fire departments are two-tone sequential. After detecting the first tone, the receiver waits for a second tone before opening up the receiver for the audio transmission—in this case the dispatch message.

There are some older tone-alerting systems that might use many tones to activate pagers, or even a simple single tone. There are various kinds of alerting systems, with many manufacturers offering their own specific systems. For more complex paging systems, such as those used by radio common carriers for strictly paging service, different kinds of tone alerting may be used to allow more pagers on a frequency. But for fire departments and rescue squads, particularly volunteer units, two-tone paging is predominant.

Dave specifically asks whether there was a way to decode the paging tones so you wouldn't have to monitor a fire dispatch frequency except when your local fire department had a call. One method would be to purchase a pager, or Plectron receiver, which would turn on the receiver only when the local fire department's tones went out over the air. Quite honestly, the local fire department might think you are nuts for wanting to catch all their calls without joining their ranks. But, if you have a good reason (such as being a fire buff) they'll probably give you the information to decode their dispatches. If they have two-tone paging, you'll need to know what frequency the tones are. The tone frequencies will be in Hertz and usually three or four digits. This information usually can be obtained from the back of a home monitor alerting unit a firefighter has, or the fire company's radio repair shop. If a pager or Plectron receiver has tone reeds installed for the proper paging tones, you'll be able to keep informed whenever the locals have a "hit." Do make sure you get the right tones, though, as a department may have separate tones for the firehouse, officers, administrators, rescue personnel, etc. You'll want the tones that are activated every time there is a fire or emergency call.

The Regency TS-2 Turbo-Scan scanner includes 800 MHz coverage and can scan 75 channels at the rate of 50 channels per second.

Harold A. Broten of Vallejo, California, reports receiving a Regency TS-2 Turbo-scan radio and was wondering what he could tune in on the 806-950 MegaHertz band. First, you can forget about more than half the band because it contains frequencies used by mobiles for inputs to repeaters. There also are broadcast relays and wireless microphones that use some segments of the band, as well as other various links. But in general, here is a list of places to tune in the 800 and 900 MHz bands for some action:

849-851—Aircraft telephone service (because this is in amplitude compandored sideband—ACSB—you'll need a sideband receiver to hear telephone calls from the planes on these frequencies.)

851-856 MHz—Repeaters used by public safety and business users. On the business repeaters, you'll hear many users sharing the same channel, just like in the 461-465 MHz business and channels.

856-866 MHz—Trunked repeaters used

by public safety and business users.

870-880 MHz—Cellular telephone systems operated by non-wireline (non-telephone company) firms.

880-890 MHz—Cellular telephone systems operated by local wireline (telephone) companies.

894-896 MHz—Ground stations for aircraft telephone service. Also in ACSB.

902-928 MHz—Amateur radio. Repeaters operate with output frequencies between 919 and 922 MHz.

929-930 MHz—Paging stations operated by private licensees.

931-932 MHz—Paging transmitters operated by radio common carriers.

No matter where you live in the United States, you're bound to hear some form of communications in the 800 or 900 MHz bands, whether it is cellular phones, paging, police, or hams. Check it out!

Patrick Rupert of Petersburg, Pennsylvania, says he is seeking frequencies used by the Pennsylvania Fish Commission, which enforces fishing laws in that commonwealth. He said he hears some traffic on 44.96 MHz. Well, that frequency is the Fish Commission's F-2. Their primary channel, or F-1, is 45.04 MHz. In addition, 44.84, the commission's F-3, is used to coordinate activities with the Pennsylvania Game Commission.

Scott Leamy checks in from Toledo, Ohio, and says he is having trouble hearing ambulances in his area. He says he can hear the hospitals talking to the ambulances, but does not hear the ambulances as they are en route. Scott, if you are listening to the "med" channels from 462.975-463.175, generally only the hospitals transmit on these base station frequencies. The ambulances transmit on a frequency 5 MHz higher on a mobile frequency. For instance, if the hospital transmits on 463.175, then you will hear the ambulance on 468.175 MHz. Repeaters are very rarely used on these "med" channels, so you'll have to switch back and forth between the base and mobile channels to hear all the action. In fact, if you are close enough to an emergency call, you might even be able to hear the packset radio used by the paramedics to relay calls from the scene to the ambulance, and then back to the hospital. Check for the packset radios on 458.025, 458.075, 458.125 and 458.175 MHz. These are low-power radios, so don't expect to hear anything unless you are at least within a mile of the emergency call.

Your Turn

We want to hear from you. So after sealing up those coaxial cables up on the roof this Spring, do some listening and send us your favorite frequencies. In fact, we'd like to see a photograph of your listening station as well. If you have comments, thoughts, suggestions or questions, you can write to Scanner Scene directly at: Chuck Gysi, N2DUP, P.O. Box 544, New Hope, PA 18938-0544. PC

CLANDESTINE COMMUNIQUÉ

WHAT'S NEW WITH THE CLANDESTINES

BY GERRY L. DEXTER

Starvation, and the threat thereof, are two of the unhappy factors which bring Ethiopia into the mainstream of the news now and then. A guerrilla war, complete with clandestine radio broadcasts, is one of the elements which contribute to the famine problem, at least to the extent that it hinders attempts at providing aid. Each side blames the other for creating these difficulties. Ethiopia, which recently became the People's Democratic Republic of Ethiopia, has battled rebel organizations bent on creating an independent nation out of what is now the northern Ethiopian province of Eritrea. The civil war has gone on for twenty six years now, with a rebel army of around 30 thousand battling a government force over eight times larger.

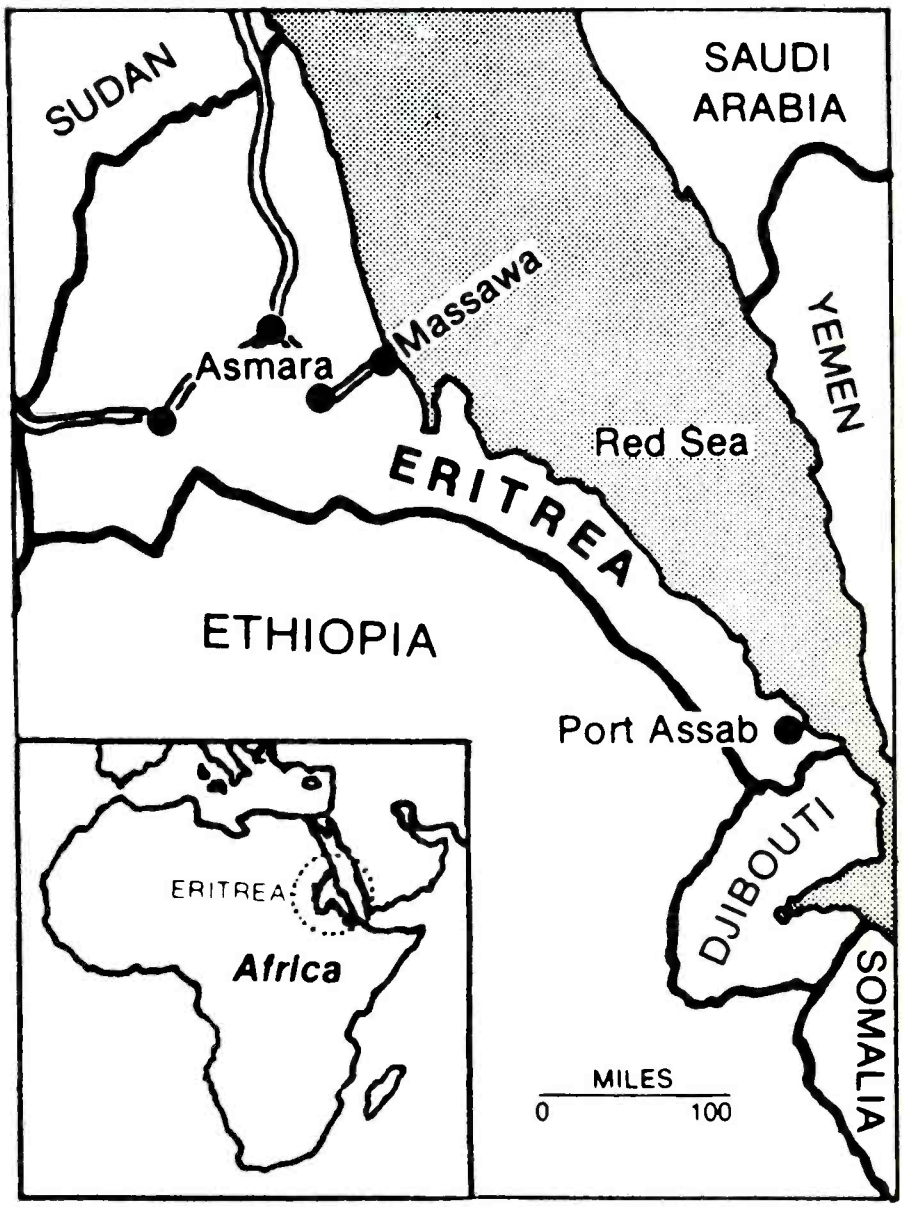
The main rebel group, the Eritrean People's Liberation Front, operates the Voice of the Broad Masses of Eritrea which seems to be based within rebel-occupied territory and may be located near the town of Orotto near the border with the Sudan.

A recent schedule for this station showed it operating from 0400 to 0600, 1430 to 1630 and 1800 to 2000 on 3940, 6297, 7050, 7490, 10010 and 14324, although these frequencies may vary from a few kHz to as much as 50 kHz or more. Programs are in local languages such as Tigrigna, Tigre, Afar, Amharic and Arabic.

Also at war with the government is the Tigre Liberation Front, which seeks independence for the province of Tigre. Its Voice of the Tigre Revolution is carried over the facilities of the Voice of the Broad Masses of Eritrea.

Another clandestine beaming at Ethiopia, is the Voice of the Western Somali, and Somali Abo Liberation Fronts, which supports the group of that name, and the claims which Somali has upon those portions of Ethiopia. This operation may be, in large part, a creation of the Somali government. The programs are aired over Radio Mogadishu's facilities at 0930 to 1000 UTC on 6095. Neither this, nor the Tigre station, has been heard in North America, at least to our knowledge. There have been a few loggings of the Eritrean station.

A more recent addition to the Ethiopian collection is the Radio Voice of Ethiopian Unity, which speaks on behalf of the Ethiopian People's Democratic Alliance, and opposes the current Marxist government in Addis Ababa. This station has been heard by many clandestine monitors in North America, and is scheduled on 9430 and 11180 at 1800 in Tigrigna, 1830 in Oromo, and 1900 to 2000 in Amharic. The station began broadcasts in early August last year, and very likely has transmitters in the Sudan. More specifically, it seems nearly certain that Sudanese government transmitters are used to carry the broadcast. There is no known address at this point.



Map shows Eritrea, Ethiopia's northern province which the EPLF and other groups want to make an independent nation.

What was probably the longest running clandestine of current times—the Voice of the Turkish Communist Party, has gone off the air. The station explained that the Turkish Communist Party, and the Turkish Worker's Party, were to be combined into the Turkish United Communist Party, and would become a legal political party allowed to operate in Turkey. Leaders of the two groups, who had been living in exile, were allowed to return to Turkey, and a new era was believed to be beginning. We have to wonder how the cessation of VOTCP broadcasts helps the cause in this case. It's hard to believe stopping the program was part of a bargain to legitimize the party. The VOTCP's sister station, Bizim Radio, will continue to operate. It was only last year,

after broadcasting since 1974, that VOTCP announced an address, said to be good for both stations. But letters sent to Box 16-367, S-103 27, Stockholm, Sweden have, so far, made only a one way trip.

All of the various Sri Lanka/Tamil clandestines which had been active during the Tamil insurrection over the past couple of years have now gone off the air. Information on them were always sketchy, and their very low power transmitters were never heard in North America, at least not as far as we know.

Jason Chudy in Lisle, Illinois wants the address for Radio Caiman. You are not alone, Jason! Regretfully, we report absolutely no progress in this area—a relief to certain folks in the Miami area, no doubt. Jason reports that Radio Caiman plays a great deal of repeat music, and wonders why we don't go into greater detail on clandestine station programming? A major reason is because much of it is in foreign languages, and thus, uncopyable, unless it comes with a transcript. Also, because in most cases, it's largely predictable—anti-government talks with local music.

Robert Ross in London, Ontario has snagged several clandestines recently, including anti-Cuban La Voz de Alpha 66 on 6667 at 0110 in Spanish with march music, talks about Cuba and ID. He also heard the anti-Angola UNITA station La Voz de Restencia do Galo Negro in Portuguese at 0335 on 4975 with sign on, march music, frequency, fanfare and music. The anti-Afghan Voice of Unity was heard by Robert in Dari at 0208 on 11490 and the Voice of Ethiopian Unity at 1905 in Amharic on both 9430 and 11180. He also bagged a possible Radio Iran on 4700 at 0253. Nice going, Robert!

That will do it for this time. Remember to forward your clandestine broadcasting loggings, news clippings, background material or other related items you may have or run across and, in so doing, help us keep readers advised on what's happening in radio's secret world. We can keep your identity confidential if you wish. PC

Please send all reader inquiries directly.

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SCAN Photo Winners

(from page 19)

manufactured in 1963. Despite this receiver's age, he says it does a good job in pulling in DX. Tommy also has an Adam computer for filing frequencies and recording his shortwave reports.

Tommy says that he also monitors channel 9 traffic since an interstate highway runs nearby, and the Akron Police Department no longer monitors that channel. He provides local information and directions, and says that even the biggest and toughest truck drivers don't like being lost in a strange town.

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NEW

Hear it All!

R-5000

High performance receiver

***THE* high performance receiver is here from the leader in communications technology—the Kenwood R-5000. This all-band, all mode receiver has superior interference reduction circuits, and has been designed with the highest performance standards in mind. Listen to foreign music, news, and commentary. Tune in local police, fire, aircraft, weather, and other public service channels with the VC-20 VHF converter. All this excitement and more is yours with a Kenwood R-5000 receiver!**

- **Covers 100 kHz-30 MHz in 30 bands, with additional coverage from 108-174 MHz (with VC-20 converter installed).**
- **Superior dynamic range.** Exclusive Kenwood DynaMix™ system ensures an honest 102 dB dynamic range. (14 MHz, 500 Hz bandwidth, 50 kHz spacing.)

- **100 memory channels.** Store mode, frequency, antenna selection.
- **Voice synthesizer option.**
- **Computer control option.**
- **Extremely stable, dual digital VFOs.** Accurate to ±10 ppm over a wide temperature range.
- **Kenwood's superb interference reduction.** Optional filters further enhance selectivity. Dual noise blankers built-in.
- **Direct keyboard frequency entry.**

- **Versatile programmable scanning, with center-stop tuning.**
- **Choice of either high or low impedance antenna connections.**
- **Kenwood non-volatile operating system.** Lithium battery backs up memories; all functions remain intact even after lithium cell expires.
- **Power supply built-in.** Optional DCK-2 allows DC operation.
- **Selectable AGC, RF attenuator, record and headphone jacks, dual 24-hour clocks with timer, muting terminals.**

Optional Accessories:

• VC-20 VHF converter for 108-174 MHz operation • YK-88A-1 6 kHz AM filter • YK-88S 2.4 kHz SSB filter • YK-88SN 1.8 kHz narrow SSB filter • YK-88C 500 Hz CW filter • YK-88CN 270 Hz narrow filter • DCK-2 DC power cable • HS-5, HS-6, HS-7 headphones • MB-430 mobile bracket • SP-430 external speaker • VS-1 voice synthesizer • IF-232C/IC-10 computer interface.

More information on the R-5000 and R-2000 is available from Authorized Kenwood Dealers.

R-2000 150 kHz-30 MHz in 30 bands • All modes • Digital VFOs tune in 50 Hz, 500 Hz, or 5 kHz steps • 10 memory channels • Programmable scanning • Dual 24-hour digital clocks, with timer • 3 built-in IF filters (CW filter optional) • All mode squelch, noise blanker, RF attenuator, AGC switch, S meter • 100/120/220/240 VAC operation • Record, phone jacks • Muting terminals • VC-10 optional VHF converter (118-174 MHz)

Specifications and prices are subject to change without notice or obligation.

KENWOOD

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